SERVICE MANUAL

Teil 1

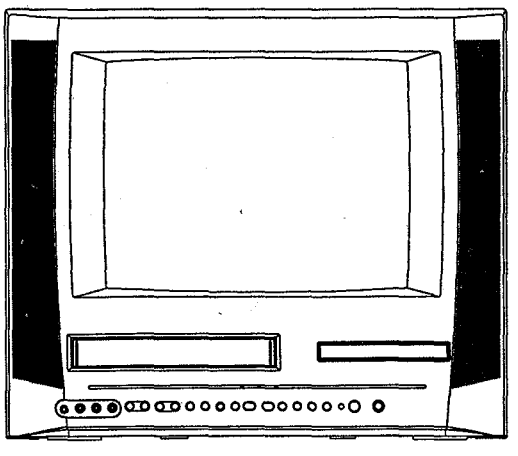
ORION

COMBI 1415SI / BSI

COLOR TELEVISION/VIDEO CASSETTE RECORDER/
DVD VIDEO PLAYER

DVD VIDEO · COMPACT disc DIGITAL VIDEO · COMPACT disc DIGITAL AUDIO · DOLBY DIGITAL · dts DIGITAL OUT · MP3 · VHS PAL SECAM

CLASS 1
LASER PRODUCT



ORIGINAL
CHASSIS CODE A

Best. Nr. SM1415B

SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.
Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a ⚠ mark, the designated parts must be used.

4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.
Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not modify the circuit.
Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

(INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the eternal exposure metal **[Note 2]** should be more than 1M ohm by using the 500V insulation resistance meter **[Note 1]**.
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

[Note 1]

If you have not the 500V insulation resistance meter, use a Tester.

[Note 2]

External exposure metal: Antenna terminal
Earphone jack

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the CHASSIS CODE.)

1. MODEL NUMBER and CHASSIS CODE
   The MODEL NUMBER can be found on the back of each product and the CHASSIS CODE can be found at the end of the SERIAL NUMBER.
2. PART NO. and DESCRIPTION
   You can find it in your SERVICE MANUAL.

TAPE REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the TV/DVD/VCR block from the main unit and the **Fig. 1** below can be seen. **(Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)**
2. Remove one screw of the Loading Motor from the insert hole for screw driver and remove the Loading Motor.
3. Rotate the Pinch Roller Cam in the direction of the arrow by hand to slacken the Video Tape. **(Refer to Fig. 2)**
4. Rotate the Clutch Ass'y either of the directions to wind the Video Tape in the Cassette Case.
5. Repeat the above step 3~4. Then take out the Video Cassette from the Deck Chassis. Be careful not to scratch on the tape.

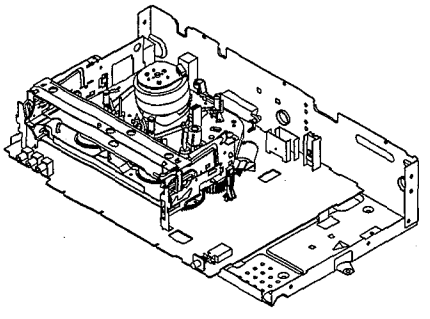


Fig. 1

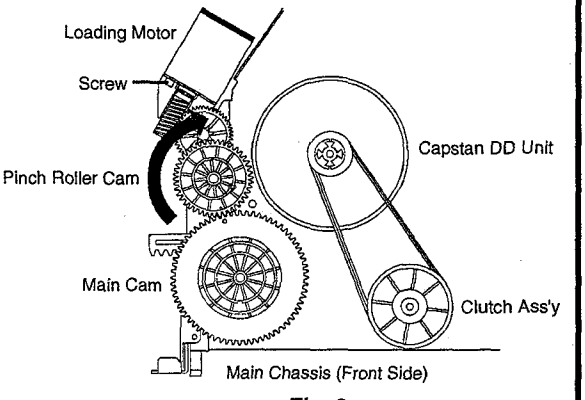


Fig. 2

DISC REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Back Cabinet, TV//DVD/VCR Block and Front Shield. **(Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)**
2. Slide the Rack Loading (White) toward the arrow direction by using a minus driver to release the lock. **(Refer to Fig. 1)**
3. Draw the Tray.

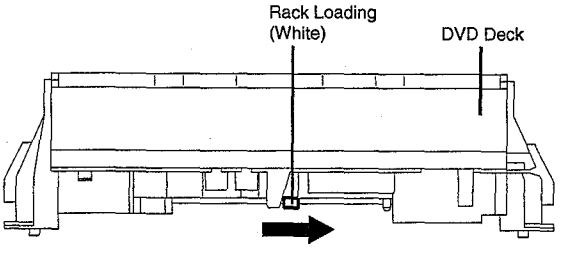


Fig. 1

PARENTAL CONTROL - RATING LEVEL

4 DIGIT PASSWORD CANCELLATION

If the stored 4 digit password in the Rating Level menu needs to be cancelled, please follow the steps below.

1. Turn Unit ON.
2. Press and hold the '7' key on the remote control unit.
3. Simultaneously press and hold the 'STOP' key on the front panel.
4. Hold both keys for more than 3 seconds.
5. The On Screen Display message 'PASSWORD CLEAR' will appear.
6. The 4 digit password has now been cleared

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GENERAL SPECIFICATIONS

G-1	TV System	CRT		CRT Size / Visual Size	14 inch / 335.4mmV
				CRT Type	Normal
				Deflection	90 degree
				Magnetic Field BV/BH	+0.45G / +0.18G
		Color System			PAL/SECAM
		Speaker			2 Speaker
				Position	Front
				Size	1.5 x 2.7 Inch
				Impedance	8 ohm
		Sound Output		MAX	1.5W + 1.5W
				10%(Typical)	1.5W + 1.5W
G-2	VCR System	System			VHS Player / Recorder
		Video System			PAL/SECAM
		Hi-Fi STEREO			Yes
		NTSC PB			Yes
		Deck		DECK	OVD-7
				Loading System	Front
				Motor	3
		Heads	Video Head		4 Heads
			FM Audio Head		2 Heads
			Audio /Control		Mono /Yes
			Erase(Full Track Erase)		Yes
		Tape Speed	Rec	PAL/SECAM	SP/LP
				NTSC	-
			Play	PAL/SECAM	SP/LP
				NTSC	SP
		Fast Forward / Rewind Time (Approx.) at 25oC		with Cassette	FF:1'48"/REW:1'48" at E-180
		Forward/Reverse Picture Search		NTSC or PAL-M	SP=3x,5x
				PAL or SECAM	SP/LP=5x,7x/7x,13x
		Frame Advance			Yes
		Slow Speed			1/5, 1/10,1/30
G-3	DVD System	Color System			PAL
		Disc			DVD, CD-DA, CD-R/RW, Video CD, SVCD
		Disc Diameter			120 mm , 80 mm
		Deck		Disc Loading System	Front Loading
				Motor	2 Motors
		Pick up			1-Lens 2-Beams System
		Playback time(Max)		DVD 1-Layer	135min (4.7GB)
				DVD 2-Layer	245min (8.5GB)
				CD	74min
				VIDEO CD	74min
		Search speed		Fwd	2-15 times / 4 step(DVD, Video CD)
					2-20 times / 4 step (CD)
				Actual	2-45 times (DVD, Video CD)
					4-40 times (CD)
				Rew	2-15 times / 4 step(DVD, Video CD)
					2-20 times / 4 step (CD)
				Actual	2-45 times (DVD, Video CD)
					4-40 times (CD)
		Slow speed		Fwd	1/8-1/2 times (DVD, Video CD)
				Actual	-
				Rew	-
				Actual	-
G-4	Tuning System	Broadcasting System			CCIR French System B/G, L
		Tuner and Receive CH		System	1 Tuner
				Destination	CCIR Hyper + France CATV
				Tuning System	F-Synth
				Input Impedance	VHF/UHF 75 ohm
				CH Coverage (SECAM)	F2~F4, FB~FQ, F21~F69
				(PAL)	E2~E4, X~Z+2, S1~S10, E5~E12,S11~S41,E21~E69
		Intermediate Frequency			PAL/SECAM(U&VH)/SECAM(VL)
				Picture(FP)	38.9/38.9/34.4MHz
				Sound(FS)	33.4/32.4/40.9MHz
				FP-FS	5.5/6.5/6.5MHz
		Auto Tuning Method			All Band (Not CCIR CH Plan)
		Preset CH			80CH
		Stereo/Dual TV Sound			No
		Tuner Sound Muting			Yes

GENERAL SPECIFICATIONS

G-5	Signal	Video Signal		Input Level	1 V p-p/75 ohm
				Output Level	1 V p-p/75 ohm
				S/N Ratio (Weighted) at DVD Mode	65dB
				S/N Ratio (Weighted) at VCR Mode	53dB
				Horizontal Resolution at DVD Mode	400 Lines
				Horizontal Resolution at VCR(SP)Mode	240 Lines
		RGB Signal		Output Level	-
		Audio Signal		Input Level	-3.8dBm/50K ohm
			VCR	Output Level (0dB=0.775Vrms)	-3.8dBm/1K ohm
			DVD	Output Level (-20dBFs 0dBFs=2.0Vrms)	-12.0dBm/1k ohm
				Digital Output Level	0.5 V p-p/75 ohm (DVD)
				S/N Ratio at DVD (Weighted)	90 dB
				S/N Ratio at VCR(SP) (Weighted)	42 dB
				Harmonic Distortion at DVD Mode	0.06% (1kHz)
				Harmonic Distortion at VCR(SP) Mode	1.5% (1kHz) Typical
				Frequency Response :	
				DVD Mode at DVD	4Hz - 22kHz
				at VIDEO CD	4Hz - 20kHz
				at SVCD	4Hz - 20kHz
				at CD	4Hz - 20kHz
				VCR Mode at SP	100Hz - 10kHz
				at LP	100Hz - 5kHz
				at SLP(EP)	-
		Hi-Fi Audio Signal		Dynamic Range : More than	75 dB
				Frequency Response :	20Hz - 20kHz
				Wow And Flutter : Less than	0.01 %Wrms
				Channel Separation : More than	60 dB
				Harmonic Distortion : Less than	1.0 %
G-6	Power	Power Source		AC	230V 50Hz
				DC	-
		Power Consumption		at AC	65 W at 230 V 50 Hz
				at DC	-
				Stand by (at AC)	5.5 W at 230 V 50 Hz
				Per Year	-
		Protector		Power Fuse	Yes
				Dew Sensor	No
G-7	Regulation			Safety	CE
				Radiation	CE
				X-Radiation	NONE
G-8	Temperature			Operation	+5oC ~ +40oC
				Storage	-20oC ~ +60oC
G-9	Operating Humidity				Less than 80% RH

GENERAL SPECIFICATIONS

G-10	*On Screen* Display (TV/VCR)	Menu		Yes	
		Menu	Type	Character	
		Timer Rec Set		Yes	
		VCR Setup			No
			Auto Repeat On/Off	Yes	
			System Select		No
		Channel Setup		Yes	
			Auto Tuning	Yes	
			Ch Mapping		No
			Ch Tuning	Yes	
			Ch Allocation	Yes	
		TV Setup		Yes	
			On/Off Timer Set	Yes	
			Picture	Yes	
			Audio		No
			NICAM Auto On/Off		No
		System Setup		Yes	
			Clock Set	Yes (Calendar 24h)	
			Language	Yes	
			System Select	Yes	
	G-CODE(or SHOWVIEW or PLUSCODE)No. Entry				No
	TV/VCR			Yes	
	DVD			Yes	
	Clock / Date			Yes	
	CH/AV			Yes	
	Tape Counter(Linear Counter)			Yes	
	Tape Speed			Yes	
	Sleep Time			Yes	
	Stereo/Audio Output				No
			Bilingual		No
			NICAM		No
	Control Level	Volume		Yes	
		Brightness/ Contrast / Sharpness / Color		Yes	
		Tint			No
		Bass/Treble/Balance			No
		Manual Tracking		Yes	
	Play/Stop/FF/Rew/Rec/OTR/T-Rec/Pause/Eject/Tape In (Symbol Mark)			Yes	
	Auto Tracking/Manual Tracking			Yes	
	Index			Yes	
	Mute			Yes	
	Hi-Fi			Yes	
	Repeat			Yes	
	PDC				No
	Zero Return			Yes	
	DEW				No

GENERAL SPECIFICATIONS

G-11	On Screen Display (DVD)	Menu				Yes
			Menu Type			Character
			Language			Yes
				OSD Language		Yes
				Menu		Yes
				SubTitle		Yes
				Audio		Yes
			Picture			Yes
				TV Screen Size		Yes
				OSD Display On/Off		Yes
			Sound			Yes
				DRC (Dynamic Range Control)		Yes
				dts Decode		No
				Output(5.1ch/ 2ch)		No
				Surround On/Off		No
				Center On/Off		No
				Sub Woofer On/Off		No
			Parental			Yes
				Password Lock/ Un Lock		Yes
				Rating Level		Yes
			Open			Yes
			Close			Yes
			No disc			Yes
			Reading			Yes
			Play			Yes
			Still/Pause			Yes
			Stop			Yes
			Prohibit Mark			Yes
			Step			Yes
			Skip(>>|)			Yes
			Skip(|<<)			Yes
			Random			Yes (CD, MP-3)
			Repeat			Yes
			Slow+ ##			Yes
			Slow- ##			No
			Search+ ##			Yes
			Search- ##			Yes
			Jump			Yes
			Resume			Yes
			Title No.			Yes
			Chapter No.			Yes
			Track No.			Yes
			Time			Yes
			Sub Title No.			Yes
			Angle No.			Yes
			Vocal On/Off			No
			Audio No.			Yes
			Audio Stereo L/R			Yes (Video CD, SVCD)
			Zoom			Yes
			Marker No.			No
			Program Play Back			Yes (CD, MP-3)
			Surround On/Off			No
			Screen Saver			No
			MP-3		Folder Name	Yes
					File Name	Yes
					File No	Yes
					Time	Yes
					Track No	Yes
G-12	OSD Language		TV/VCR			English, French, Spanish, German, Italian
			DVD			English, French, Spanish, German, Italian
G-13	Clock,Timer and Timer Back-up	Calendar				1990/1/1 ~ 2081/12/31
		Timer Events				8 Program/ 1 Month
		One Touch Recording Max Time				6 Hours
		OTPB Valid Time				-
		Sleep Timer		Max Time	120	Min
				Step	10	Min
		On/Off Timer		Program(On Timer / Off Timer)	1	Program
		Auto Shut Off		No Signal	15	Min
				No Operation	-	Min
		Timer Back-up (at Power Off Mode)			30	min.

GENERAL SPECIFICATIONS

G-14	Remote Control Unit	Unit		RC-GK
		Glow in Dark Remocon		No
		Format		NEC
		Custom Code		71-8E
		Power Source	Voltage(D.C)	3V
			UM size x pcs	UM-4 x 2 pcs
		Total Keys		50 Keys
		Keys	Power/Standby	Yes
			Eject	Yes
			Open/Close	Yes
			Display	Yes
			1	Yes
			2	Yes
			3	Yes
			4	Yes
			5	Yes
			6	Yes
			7	Yes
			8	Yes
			9	Yes
			0/AV	Yes
			CH / Page Up	Yes
			CH / Page Down	Yes
			Cursor Up	Yes
			Cursor Up / Green	No
			Cursor Down	Yes
			Cursor Down / Yellow	No
			Cursor Left	Yes
			Cursor Left / Red	No
			Cursor Right	Yes
			Cursor Right / Cyan	No
			Enter / Text/Mix/TV	Yes
			Volume Up	Yes
			Volume Down	Yes
			TV/VCR	Yes
			DVD	Yes
			DVD Menu	Yes
			Setup/ Menu	Yes
			Title / ATR	Yes
			Return	Yes
			Play Mode/ Quick View	Yes
			Zoom / Reveal	Yes
			Sleep	Yes
			Mute	Yes
			Repeat A-B/ Program	Yes
			F/T/B / Cancel	Yes
			Jump/ Hold/ SP/LP	Yes
			Sub Page/ Index	Yes
			Timer REC	Yes
			Angle/ Counter Reset	Yes
			Subtitle/ Zero Return	Yes
			Audio	Yes
			Rew	Yes
			Play	Yes
			F. Fwd	Yes
			Tracking-/ Skip-	Yes
			Stop	Yes
			Tracking+/ Skip+	Yes
			Rec/OTR	Yes
			Slow Up	Yes
			Pause / Still / Step	Yes

GENERAL SPECIFICATIONS

G-15	Features	Auto Head Cleaning		Yes
		Auto Tracking		Yes
		HQ (VHS Standard High Quality)		Yes
		Auto Power On, Auto Play, Auto Rewind, Auto Eject		Yes
		VIDEO PLUS+(SHOWVIEW,G-CODE)		No
		CH Auto Set-Up/Auto Clock		No
		VPS/PDC		No
		Auto Tuning		Yes
		Forward / Reverse Picture Search		Yes
		TV Auto Shut off Function		Yes
		Index Search		Yes
		SQPB		No
		CM Skip(30sec x 6 Times)		No
		TV Monitor		No
		Choke Coil		No
		Protect of FBT Leak Circuit		No
		Zero Return		Yes
		Power On Memory		No
		T'Text		Yes
			Text type	UNI Text
		Parental Lock (DVD Only)		Yes
		Tray Lock		No
		Auto Stop (Pause, and Resume Stop after 5min.)		Yes
		VIDEO CD Playback		Yes
		SVCD Playback		Yes
			Overlay Graphics And Text	No
			Command List	No
			Entry Point Jump	No
		MP3 Playback		Yes
		Digital Out	Dolby Digital	Yes
			PCM	Yes
			DTS	Yes
			MPEG1, MPEG2	Yes
		Down Mix Out	(Dolby Digital, MPEG1,MPEG2)	Yes
		TruSurround		No
		Screen Saver		No
G-16	Accessories	Owner's Manual	Language	French/ Dutch
			w/Guarantee Card	Yes
		Remote Control Unit		Yes
		Rod Antenna		No
			Poles	-
			Terminal	-
			w/300 ohm to 75 ohm Antenna Adapter	-
		Loop Antenna		No
			Terminal	-
		U/V Mixer		No
		DC Car Cord (Center+)		No
		Guarantee Card		No
		Warning Sheet		No
		Circuit Diagram		No
		Antenna Change Plug		No
		Service Facility List		No
		Important Safeguard		No
		Dew/AHC Caution Sheet		No
		AC Plug Adapter		No
		Quick Set-up Sheet		Yes
		Battery		Yes
			UM size x pcs	UM-4 x 2 pcs
		AC Cord		No
		AV Cord (2Pin-1Pin)		No
		21pin-RCA Cable		No
		Registration Card		No
		PTB Sheet		No
		Anti-Theft Sheet		No
		Euro Warranty Information Sheet		No

GENERAL SPECIFICATIONS

G-17	Interface	Switch	Front	Power(Standby)	Yes
				Channel Up	Yes
				Channel Down	Yes
				Volume Up	Yes
				Volume Down	Yes
				Play (VCR)	Yes
				Stop / Eject (VCR)	Yes
				F.FWD/Cue (VCR)	Yes
				Rew/Rev (VCR)	Yes
				REC/OTR (VCR)	Yes
				Play (DVD)	Yes
				Stop (DVD)	Yes
				Skip+ / Search+ (DVD)	Yes
				Skip- / Search- (DVD)	Yes
				Open/Close (DVD)	Yes
				Input Select	No
				Main Power SW	Yes
		Indicator		Standby	Yes (Red)
				REC/OTR	Yes (Red)
				T-REC	Yes (Red)
				TV/VCR	No
				DVD	No
		Terminals	Front	Video Input	RCA x1
				Audio Input	RCA x2
				Other Terminal	Headphone (Stereo & Mono, 3.5mm)
			Rear	Video Input	No
				Audio Input	No
				Video Output	No
				Audio Output	RCA x2
				Digital Audio Output	Coaxial (DVD Only)
				Euro Scart	1-SCART
				VHF/UHF Antenna Input	DIN type
				AC Inlet	No
G-18	Set Size			Approx. W x D x H (mm)	470 x 393 x 400
G-19	Weight			Net (Approx.)	13.0kg (28.7lbs)
				Gross (Approx.)	16.0kg (35.3lbs)
G-20	Carton		Master Carton		No
				Content	-
				Material	-
				Dimensions W x D x H(mm)	-
				Description of Origin	-
			Gift Box		Yes
				Material	Double/White
				Dimensions W x D x H(mm)	575 x 497 x 471
				Design	As per Buyer's
				Description of Origin	No
			Drop Test	Natural Dropping At	1 Corner / 3 Edges / 6 Surfaces
				Height (cm)	62
			Container Stuffing(40' container)		476 Sets
G-21	Material		Cabinet	Front	PS 94HB
				Rear	PS 94HB
				Jack Panel	-
			PCB	Non-Halogen Demand	No
				Eyelet	No

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: BACK CABINET (Refer to Fig. 1-1)

1. Remove the 4 screws ①.
2. Remove the Back Cabinet in the direction of arrow.

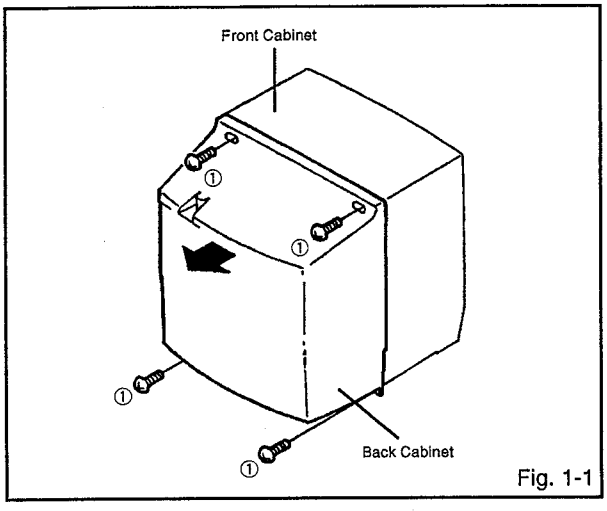


Fig. 1-1

1-2: CRT PCB (Refer to Fig. 1-2)

CAUTION: BEFORE REMOVING THE ANODE CAP, DISCHARGE ELECTRICITY BECAUSE IT CONTAINS HIGH VOLTAGE. BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.

1. Remove the Anode Cap.
   (Refer to REMOVAL OF ANODE CAP)
2. Disconnect the following connector:
   (CP801 and CP853B).
3. Remove the CRT PCB in the direction of arrow.

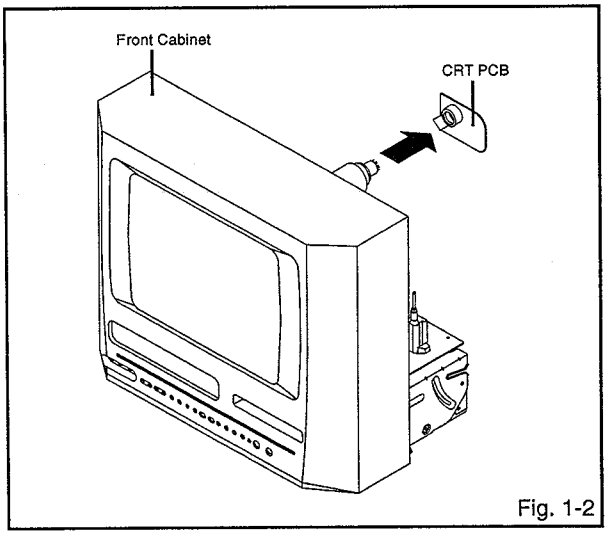


Fig. 1-2

1-3: TV/DVD/VCR BLOCK (Refer to Fig. 1-3)

1. Remove the 2 screws ①.
2. Disconnect the following connectors:
   (CP351, CP353, CP402 and CP1702).
3. Remove the TV/DVD/VCR Block in the direction of arrow.

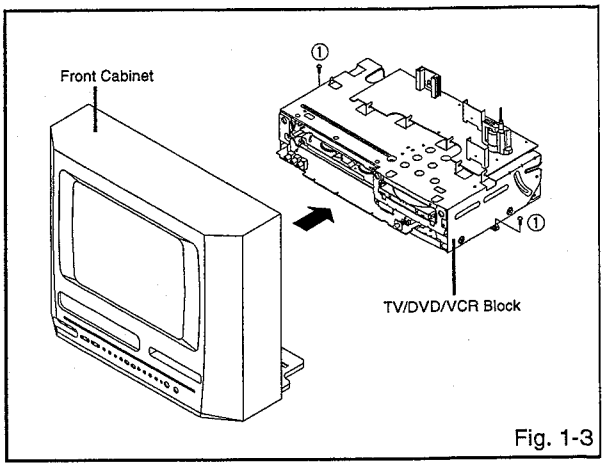


Fig. 1-3

1-4: MAIN PCB (Refer to Fig. 1-4)

1. Remove the 2 screws ①.
2. Remove the 4 screws ②.
3. Disconnect the following connectors:
   (CP001, CP1704, CP820 and CP851A).
4. Remove the Main PCB in the direction of arrow.

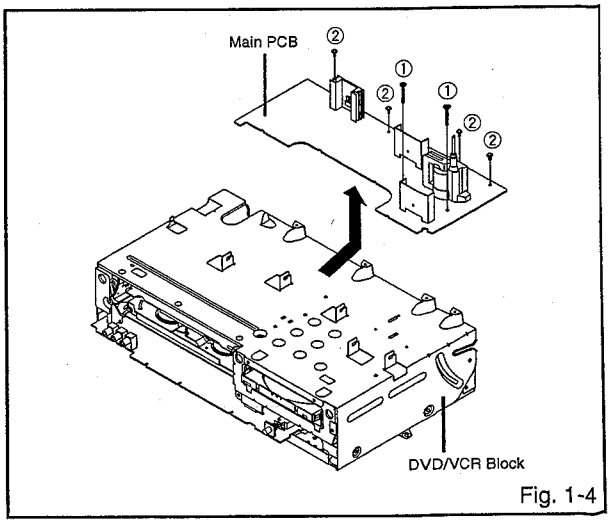


Fig. 1-4

DISASSEMBLY INSTRUCTIONS

1-5: TOP SHIELD (Refer to Fig. 1-5)

1. Remove the 12 screws ①.
2. Remove the Top Shield in the direction of arrow.

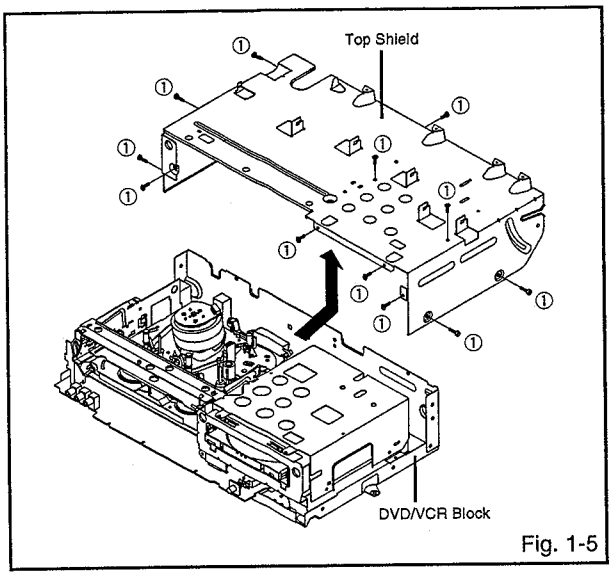


Fig. 1-5

1-6: DVD BLOCK (Refer to Fig. 1-6)

1. Remove the 5 screws ①.
2. Disconnect the following connectors:
   (CP8001 and CP8002).
3. Remove the DVD Block in the direction of arrow.

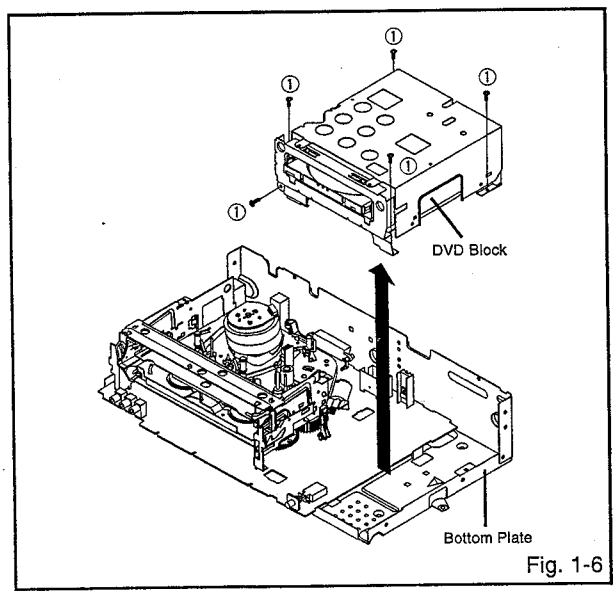


Fig. 1-6

1-7: DVD PCB/DVD DECK (Refer to Fig. 1-7)

1. Make the short circuit on the position as shown **Fig. 1-7** using a soldering. If you remove the DVD Deck with no soldering, the Laser may be damaged.
2. Remove the 7 screws ①.
3. Remove the TOP DVD in the direction of arrow (A).
4. Remove the 2 screws ②.
5. Remove the Front Shield in the direction of arrow (B).
6. Disconnect the following connectors:
   (CP2001, CP2301 and CP2302).
7. Remove the 4 screws ③.
8. Remove the DVD PCB and M-PEG Shield in the direction of arrow (C).
9. Remove the 4 screws ④.
10. Remove the DVD Deck in the direction of arrow (D).

NOTE

When the installation of the DVD Deck, remove all the soldering on the short circuit position after the connection of Pick Up PCB and DVD PCB connector.

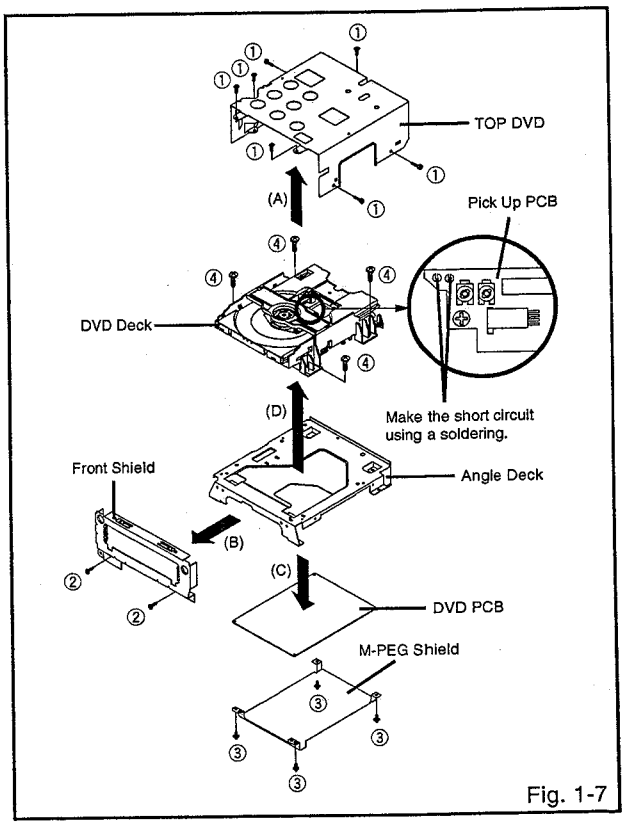


Fig. 1-7

DISASSEMBLY INSTRUCTIONS

1-8: VCR DECK (Refer to Fig. 1-8)

NOTE

Do not remove the cable at the FE Head section. The FE Head may be damaged if you remove the cable by force.

1. Move the Cassette Holder Ass'y to the back side.
2. Remove the 3 screws ①.
3. Remove the screw ②.
4. Remove the FE Head.
5. Disconnect the following connectors: (CP1001, CP4501 and CP4502).
6. Remove the AC Head Cover and VCR Deck in the direction of arrow.

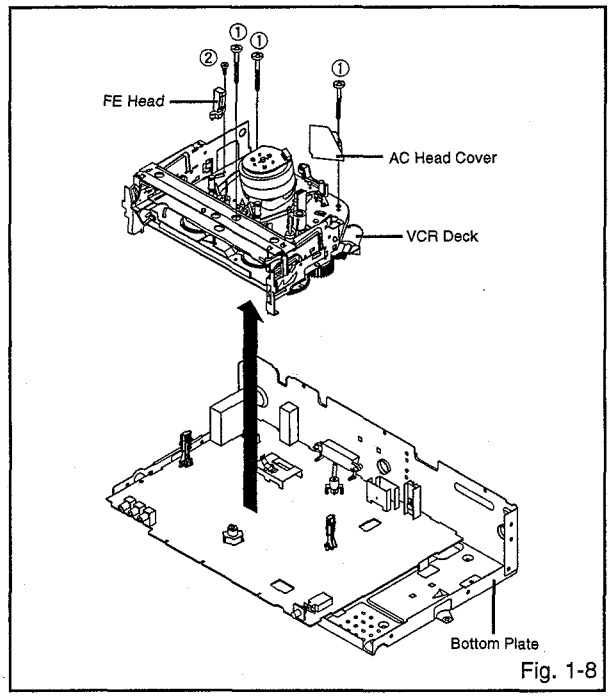


Fig. 1-8

1-9: VCR PCB (Refer to Fig. 1-9)

1. Remove the 4 screws ①.
2. Remove the VCR PCB in the direction of arrow.

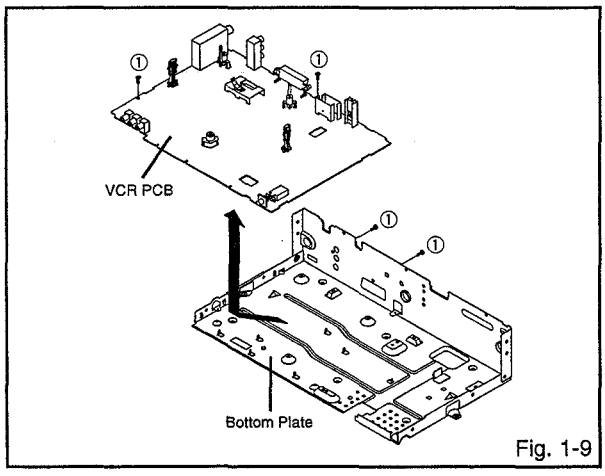


Fig. 1-9

DISASSEMBLY INSTRUCTIONS

2. REMOVAL OF VCR DECK PARTS

2-1: TOP BRACKET (Refer to Fig. 2-1)

1. Extend the 2 supports ①.
2. Slide the 2 supports ② and remove the Top Bracket.

NOTE

1. After the installation of the Top Bracket, bend the support ① so that the Top Bracket is fixed.

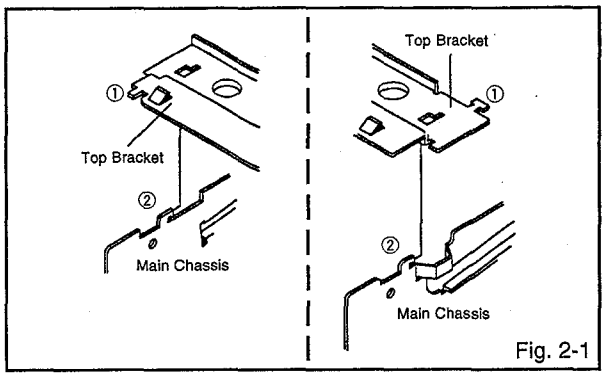


Fig. 2-1

2-2: CASSETTE HOLDER ASS'Y (Refer to Fig. 2-2)

1. Move the Cassette Holder Ass'y to the front side.
2. Push the Locker R to remove the Cassette Side R.
3. Remove the Cassette Side L.

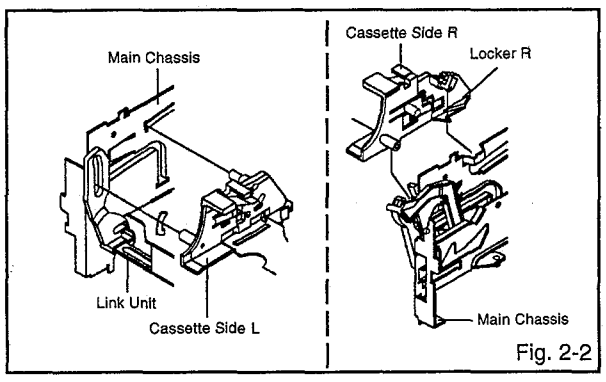


Fig. 2-2

2-3: CASSETTE SIDE L/R (Refer to Fig. 2-3-A)

1. Remove the Locker Spring.
2. Unlock the 4 supports ① and then remove the Cassette Side L/R.
3. Unlock the support ② and then remove the Locker R.

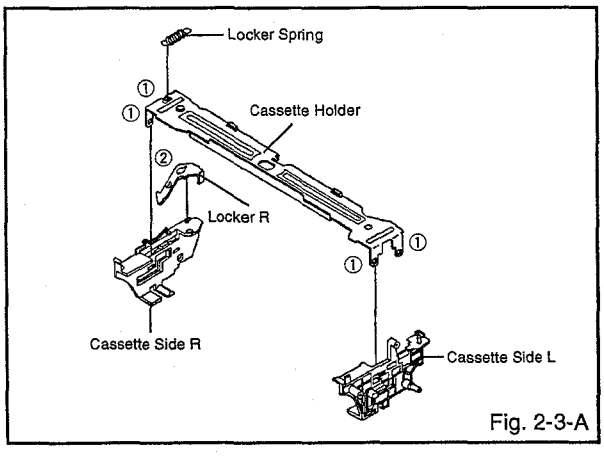


Fig. 2-3-A

NOTE

1. In case of the Locker R installation, check if the one position of Fig.2-3-B are correctly locked.
2. When you install the Cassette Side R, be sure to move the Locker R after installing.

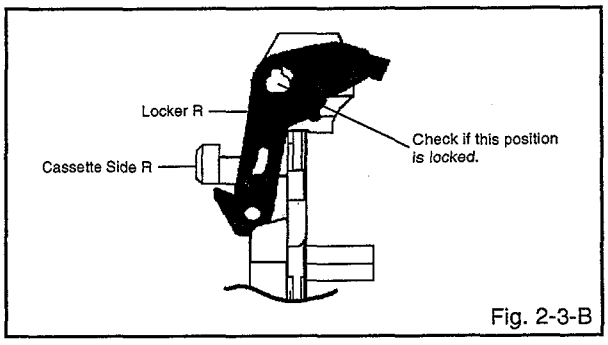


Fig. 2-3-B

2-4: LINK UNIT (Refer to Fig. 2-4)

1. Set the Link Unit to the Eject position.
2. Unlock the support ①.
3. Remove the (A) side of the Link Unit first, then remove the (B) side.

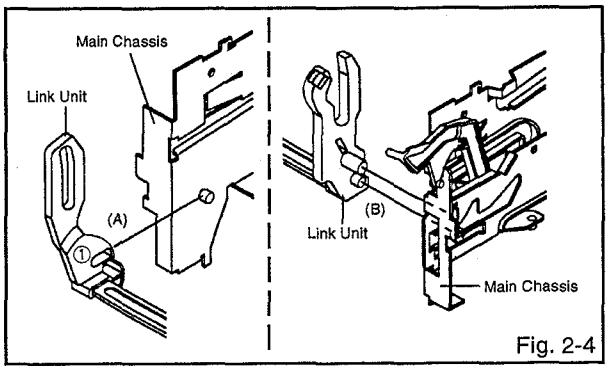


Fig. 2-4

2-5: LINK LEVER/FLAP LEVER (Refer to Fig. 2-5)

1. Extend the support ①.
2. Remove the Link Lever.
3. Remove the Flap Lever.

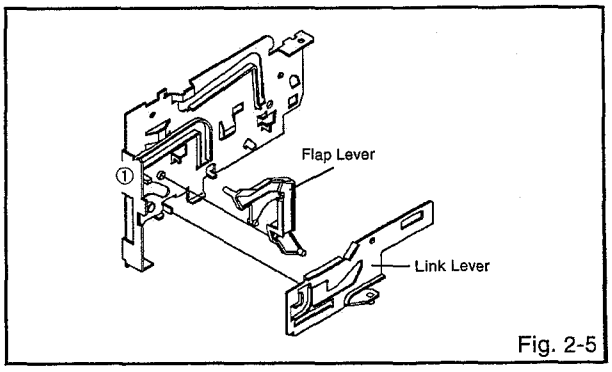


Fig. 2-5

DISASSEMBLY INSTRUCTIONS

2-6: LOADING MOTOR/WORM (Refer to Fig. 2-6-A)

1. Remove the screw ①.
2. Remove the Loading Motor.
3. Remove the Worm.

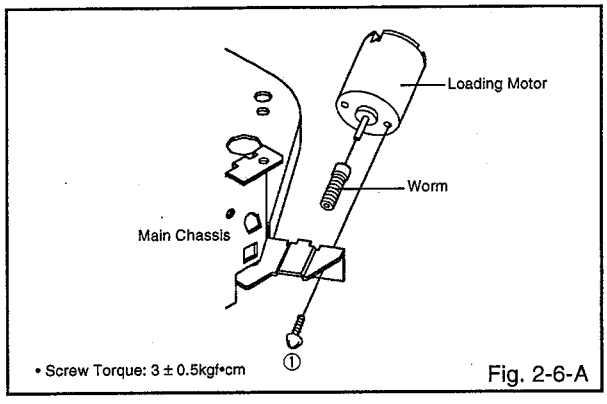


Fig. 2-6-A

NOTE

1. In case of the Worm installation, check if the value of the Fig. 2-6-B is correct.
2. In case of the Loading Motor installation, slacken the wire as shown Fig. 2-6-C.
3. When installing the wires between Capstan DD Unit and Loading Motor, connect them correctly as shown Fig. 2-6-D.

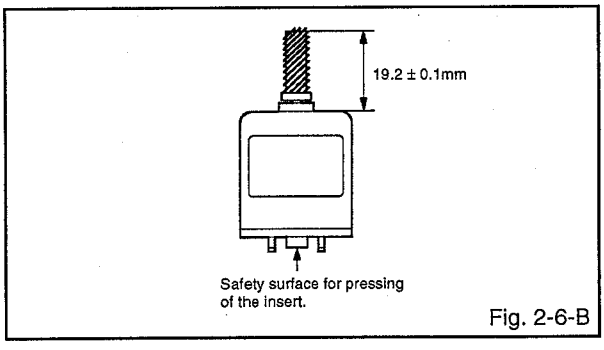


Fig. 2-6-B

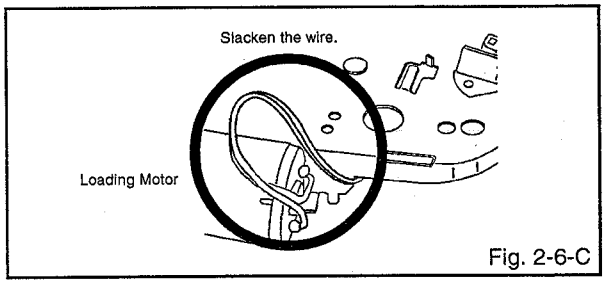


Fig. 2-6-C

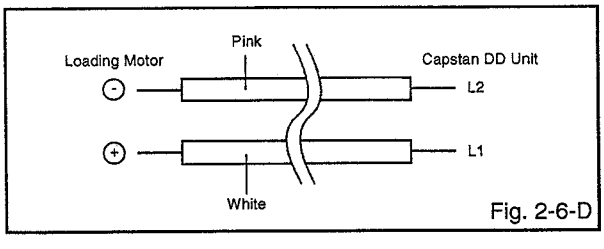


Fig. 2-6-D

2-7: TENSION ASS'Y (Refer to Fig. 2-7-B)

1. Turn the Pinch Roller Cam clockwise so that the Tension Holder hook is set to the position of Fig. 2-7-A to move the Tension Arm Ass'y.
2. Remove the Tension Spring.
3. Unlock the 2 supports ① and remove the Tension Band.
4. Unlock the support ② and remove the Tension Arm Ass'y.
5. Unlock the support ③ and remove the Tension Connect.
6. Float the hook ④ and turn it clockwise then remove the Tension Holder.

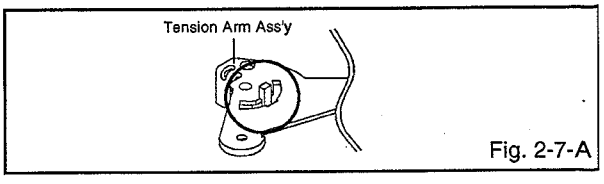


Fig. 2-7-A

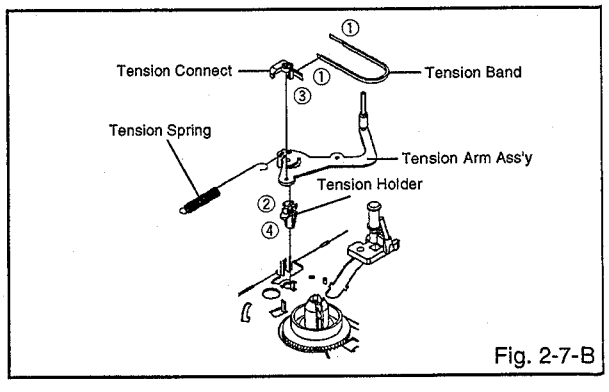


Fig. 2-7-B

NOTE

1. In case of the Tension Band installation, note the direction of the installation. **(Refer to Fig. 2-7-C)**
2. In case of the Tension Band installation, install correctly as Fig. 2-7-D.
3. In case of the Tension Connect installation, install as the circled section of Fig. 2-7-E.

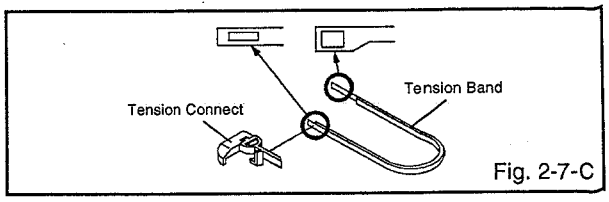


Fig. 2-7-C

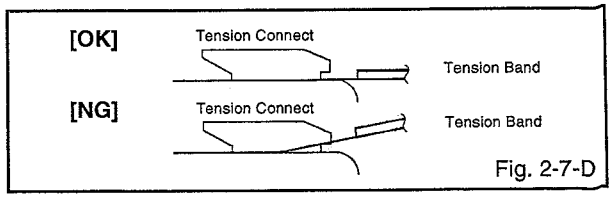


Fig. 2-7-D

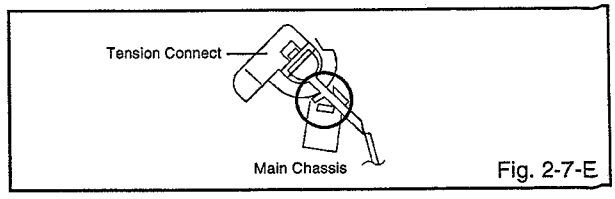


Fig. 2-7-E

DISASSEMBLY INSTRUCTIONS

2-8: T BRAKE ARM/T BRAKE BAND (Refer to Fig. 2-8-A)

1. Remove the T Brake Spring.
2. Turn the T Brake Arm clockwise and bend the hook section to remove it.
3. Unlock the 2 supports ① and remove the T Brake Band.

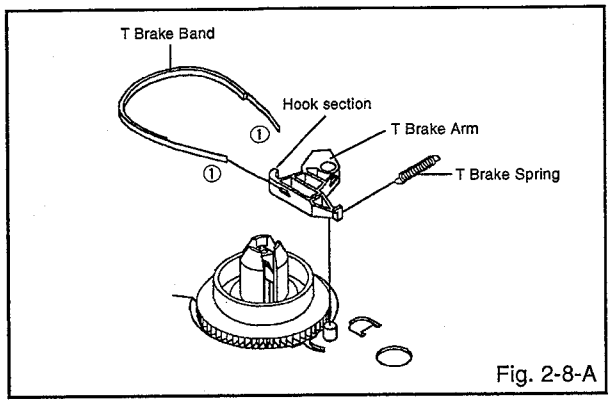


Fig. 2-8-A

NOTE

1. In case of the T Brake Band installation, install correctly as Fig. 2-8-B.

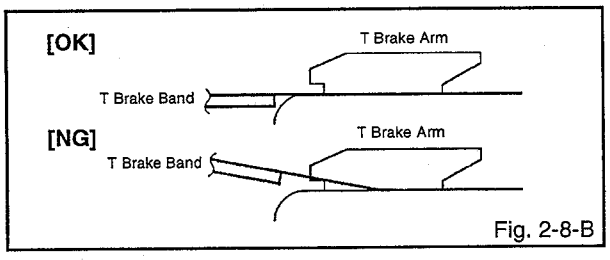


Fig. 2-8-B

2-9: S REEL/T REEL/IDLER ARM ASS'Y/IDLER GEAR (Refer to Fig. 2-9-A)

1. Remove the S Reel and T Reel.
2. Remove the 2 Polyslider Washers ①.
3. Remove the Idler Arm Ass'y and Idler Gear.

NOTE

1. Take care not to damage the gears of the S Reel and T Reel.
2. The Polyslider Washer may be remained on the back of the reel.
3. Take care not to damage the shaft.
4. Do not touch the section "A" of S Reel and T Reel. (Use gloves.) **(Refer to Fig. 2-9-A)** Do not adhere the stains on it.
5. When you install the reel, clean the shaft and grease it (FG-84M). (If you do not grease, noise may be heard in FF/REW mode.)
6. After installing the reel, adjust the height of the reel. **(Refer to MECHANICAL ADJUSTMENT)**

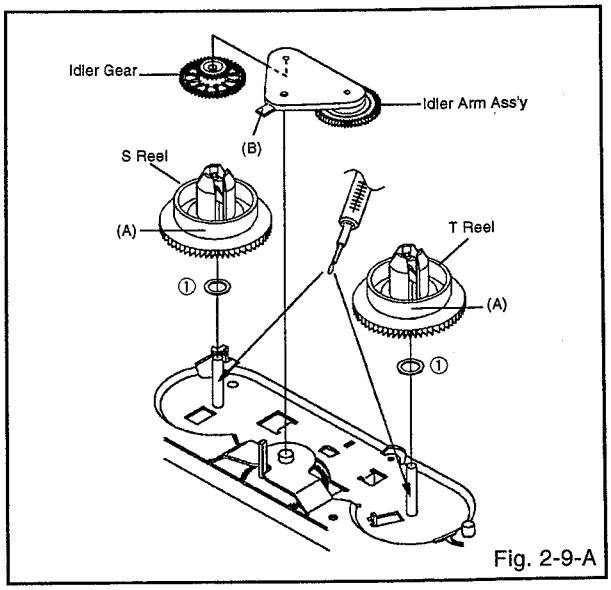


Fig. 2-9-A

NOTE

1. In case of the S Reel and T Reel installation, check if the correct parts are installed. **(Refer to Fig. 2-9-B)**
2. In case of the Idler Arm Ass'y installation, install correctly as Fig. 2-9-C. And also set it so that the section "B" of Fig. 2-9-A is placed under the Main Chassis tab.

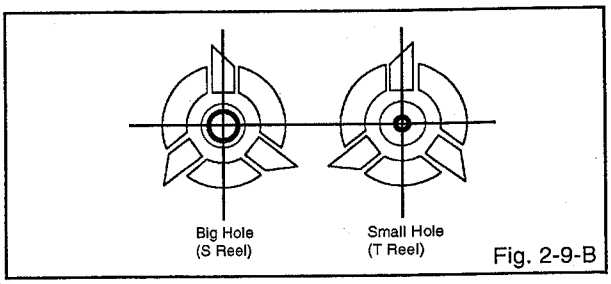


Fig. 2-9-B

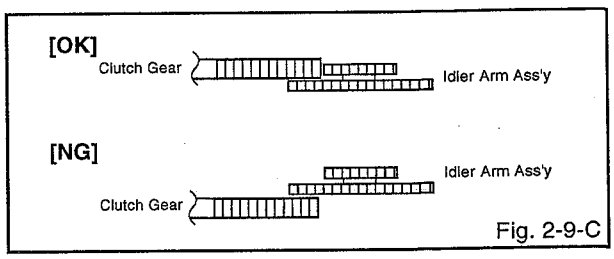


Fig. 2-9-C

DISASSEMBLY INSTRUCTIONS

2-10: CASSETTE OPENER/PINCH ROLLER BLOCK/ P5 ARM ASS'Y (Refer to Fig. 2-10-A)

1. Unlock the support ① and remove the Cassette Opener.
2. Remove the Pinch Roller Block and P5 Arm Ass'y.

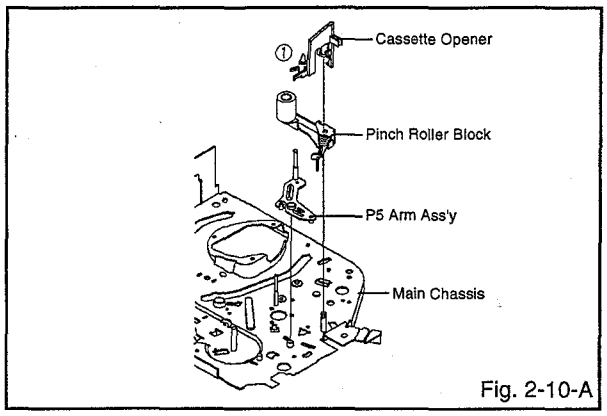


Fig. 2-10-A

NOTE

1. Do not touch the Pinch Roller. (Use gloves.)
2. In case of the Pinch Roller Block and the Pinch Roller Cam installation, install correctly as Fig. 2-10-B.

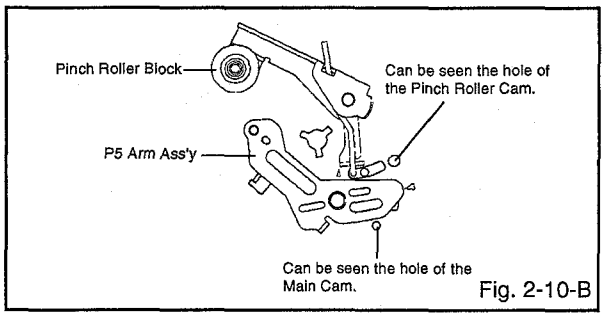


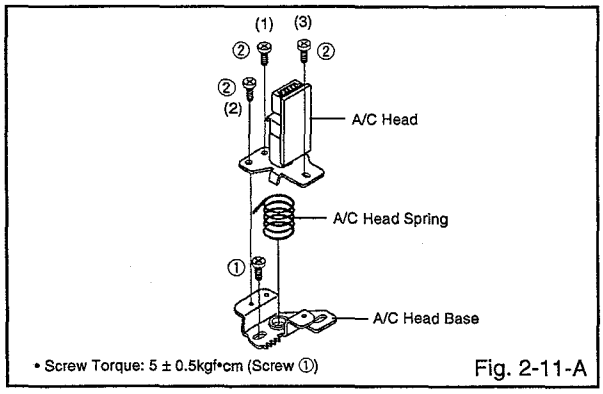
Fig. 2-10-B

2-11: A/C HEAD (Refer to Fig. 2-11-A)

1. Remove the screw ①.
2. Remove the A/C Head Base.
3. Remove the 3 screws ②.
4. Remove the A/C Head and A/C Head Spring.

NOTE

1. Do not touch the A/C Head. (Use gloves.)
2. When you install the A/C Head Spring, install as shown in Fig. 2-11-B.
3. When you install the A/C Head, tighten the screw (1) first, then tighten the screw (2), finally tighten the screw (3).



• Screw Torque: 5 ± 0.5kgf•cm (Screw ①)
Fig. 2-11-A

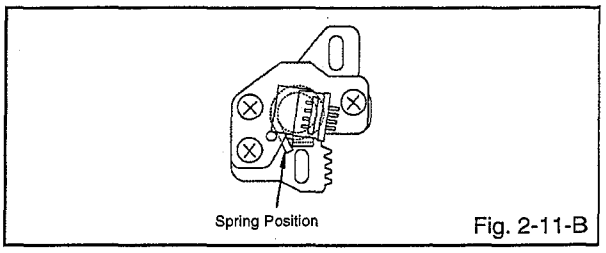
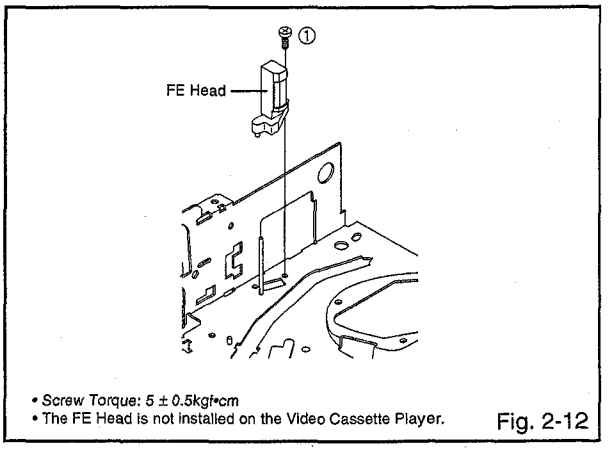


Fig. 2-11-B

2-12: FE HEAD (RECORDER ONLY) (Refer to Fig. 2-12)

1. Remove the screw ①.
2. Remove the FE Head.



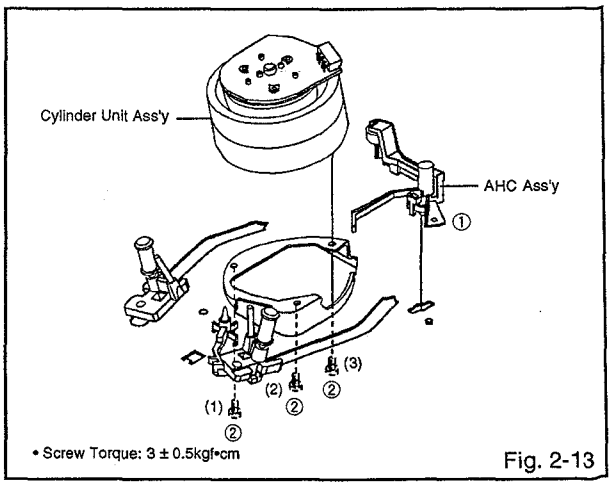
• Screw Torque: 5 ± 0.5kgf•cm
• The FE Head is not installed on the Video Cassette Player.
Fig. 2-12

2-13: AHC ASS'Y/CYLINDER UNIT ASS'Y (Refer to Fig. 2-13)

1. Unlock the support ① and remove the AHC Ass'y.
2. Disconnect the following connector: (CD2001)
3. Remove the 3 screws ②.
4. Remove the Cylinder Unit Ass'y.

NOTE

1. When you install the Cylinder Unit Ass'y, tighten the screws from (1) to (3) in order while pulling the Ass'y toward the left front direction.



• Screw Torque: 3 ± 0.5kgf•cm
Fig. 2-13

DISASSEMBLY INSTRUCTIONS

2-14: CAPSTAN DD UNIT (Refer to Fig. 2-14-A)

1. Remove the Capstan Belt.
2. Remove the 3 screws ①.
3. Remove the Capstan DD Unit.

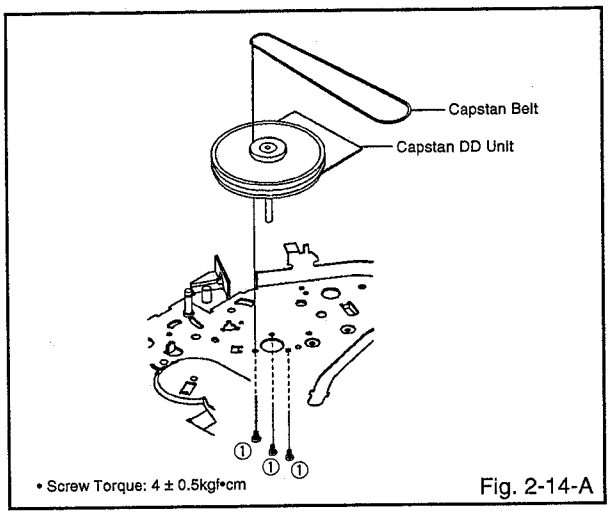


Fig. 2-14-A

NOTE

1. In case of the Capstan DD Unit installation, apply the silicon bond (TSE3843-W) on the position Fig. 2-14-B correctly. (If no silicon bond applied, abnormal noise will be heard on the deck operation.) **(Refer to Fig. 2-14-B, C)**

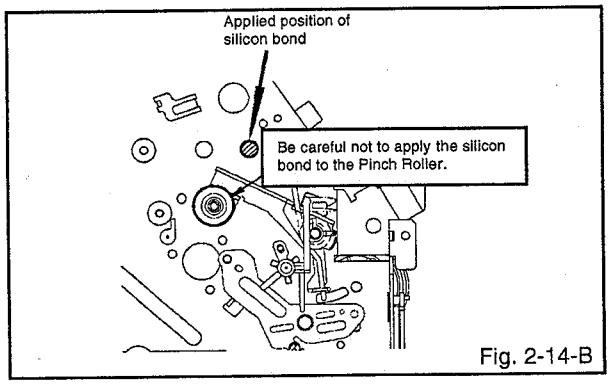


Fig. 2-14-B

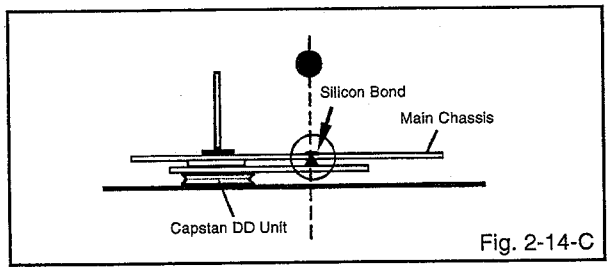


Fig. 2-14-C

2-15: MAIN CAM/PINCH ROLLER CAM/JOINT GEAR (Refer to Fig. 2-15-A)

1. Remove the E-Ring ①, then remove the Main Cam.
2. Remove the E-Ring ②, then remove the Pinch Roller Cam and Joint Gear.

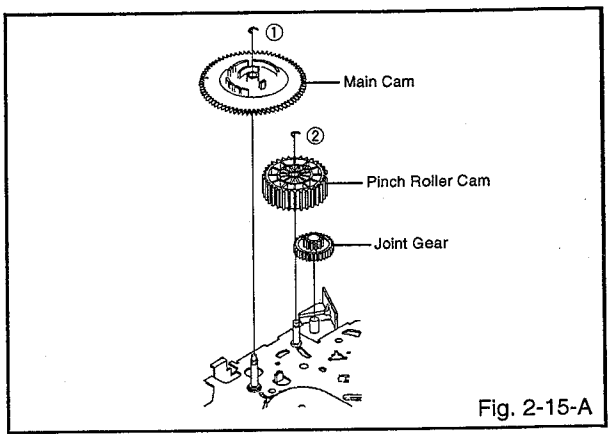


Fig. 2-15-A

NOTE

1. In case of the Pinch Roller Cam and Main Cam installation, install them as the circled section of Fig. 2-15-B so that the each markers are met. **(Refer to Fig. 2-15-B)**

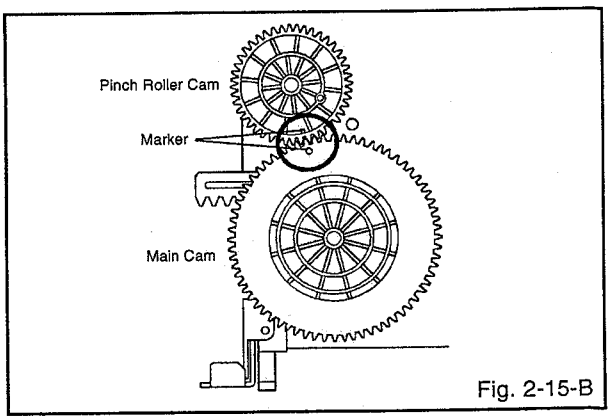


Fig. 2-15-B

2-16: LOADING GEAR S/T UNIT (Refer to Fig. 2-16-A)

1. Remove the E-Ring ① and remove the Main Loading Gear.
2. Remove the Main Rod, Tension Lever, Loading Arm S Unit and Loading Arm T Unit.

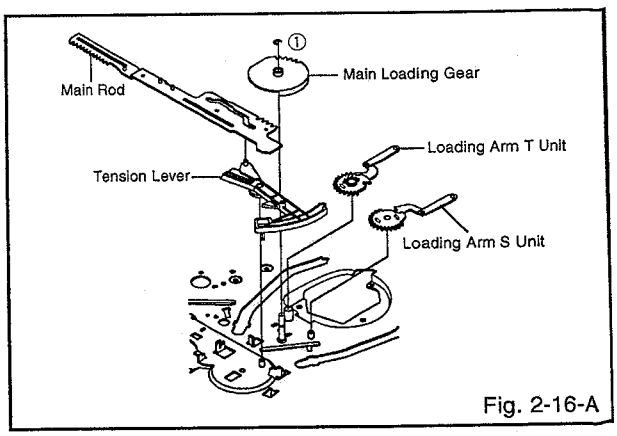


Fig. 2-16-A

DISASSEMBLY INSTRUCTIONS

NOTE

1. When you install the Loading Arm S Unit, Loading Arm T Unit and Main Loading Gear, align each marker. **(Refer to Fig. 2-16-B)**

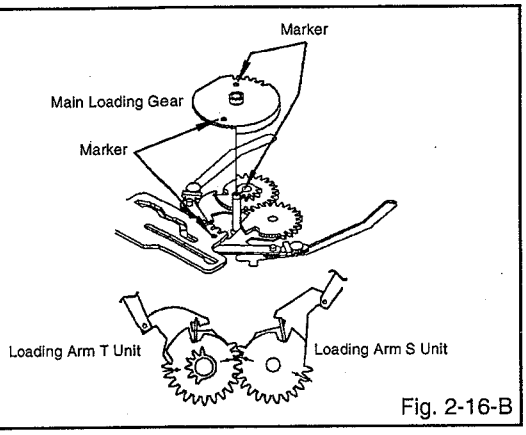


Fig. 2-16-B

2-17: CLUTCH ASS'Y/RING SPRING/CLUTCH LEVER/ CLUTCH GEAR (Refer to Fig. 2-17-A)

1. Remove the Polyslider Washer ①.
2. Remove the Clutch Ass'y and Ring Spring.
3. Remove the Clutch Lever.
4. Remove the Coupling Gear, Coupling Spring and Clutch Gear.

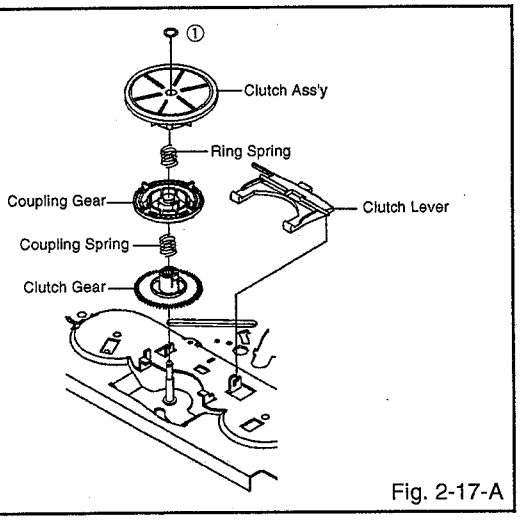


Fig. 2-17-A

NOTE

1. In case of the Clutch Ass'y installation, install it with inserting the spring of the Clutch Ass'y into the dent of the Coupling Gear. **(Refer to Fig. 2-17-B)**

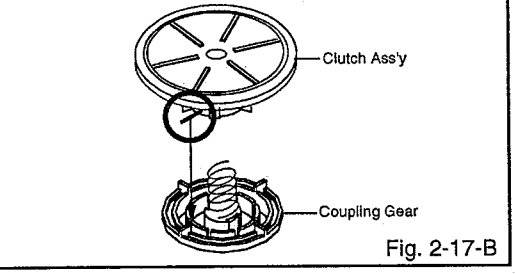


Fig. 2-17-B

2-18: CASSETTE GUIDE POST/INCLINED BASE S/T UNIT/P4 CAP/LED REFLECTOR (Refer to Fig. 2-18-A)

1. Remove the P4 Cap.
2. Unlock the support ① and remove the Cassette Guide Post.
3. Remove the Inclined Base S/T Unit.
4. Remove the screw ②.
5. Remove the LED Reflector.

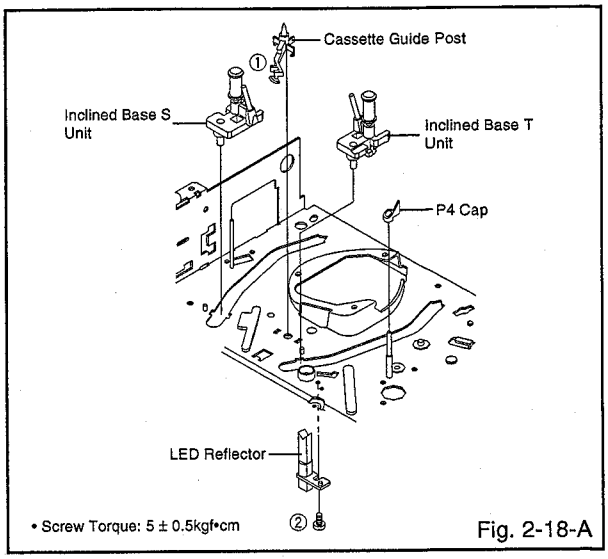


Fig. 2-18-A

NOTE

1. Do not touch the roller of Guide Roller.
2. In case of the P4 Cap installation, install it with parallel for "A" and "B" of Fig. 2-18-B.
3. In case of the Cassette Guide Post installation, install correctly as the circled section of Fig. 2-18-C.

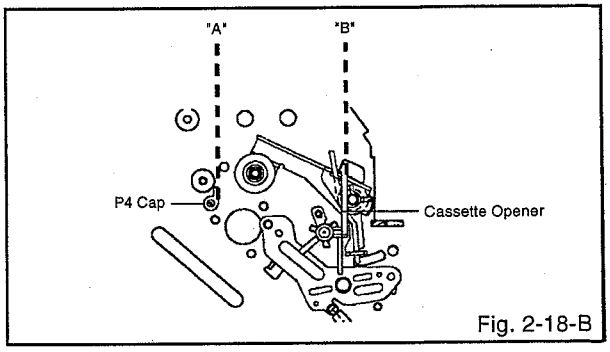


Fig. 2-18-B

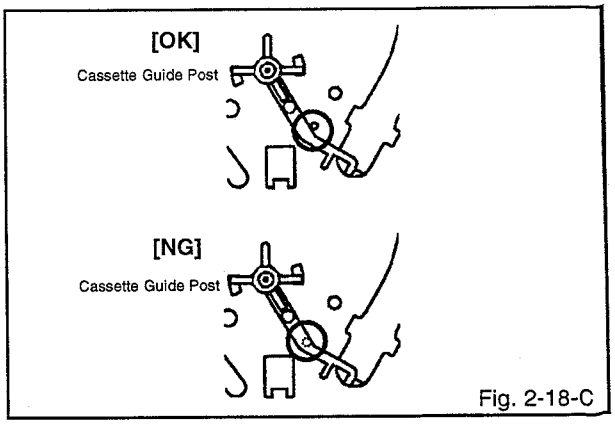


Fig. 2-18-C

DISASSEMBLY INSTRUCTIONS

3. REMOVAL OF DVD DECK PARTS

NOTE

1. Do not disassemble the DVD DECK PARTS except listed parts here. Minute adjustments are needed if the disassemble is done. If the repair is needed except listed parts, replace the DVD MECHA ASS'Y.

3-1: TRAY (Refer to Fig. 3-1-A)

1. Set the Tray opened. **(Refer to the DISC REMOVAL METHOD AT NO POWER SUPPLY)**
2. Unlock the support ① and remove the Tray.

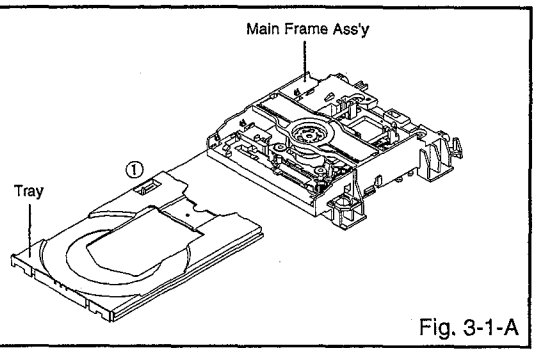


Fig. 3-1-A

NOTE

1. In case of the Tray installation, install them as the circled section of Fig. 3-1-B so that the each markers are met.

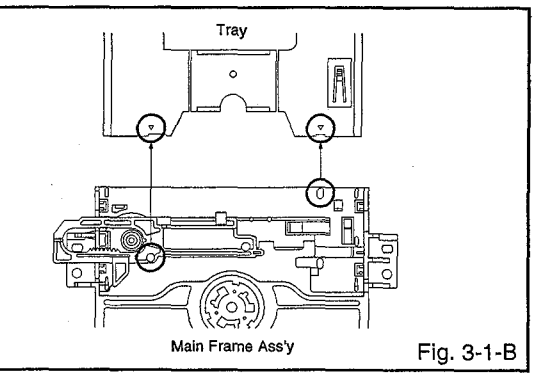


Fig. 3-1-B

3-2: MAIN CHASSIS ASS'Y (Refer to Fig. 3-2)

1. Remove the Main Chassis Ass'y from the Insulator (R).
2. Unlock the support ①.
3. Remove the Main Chassis Ass'y.

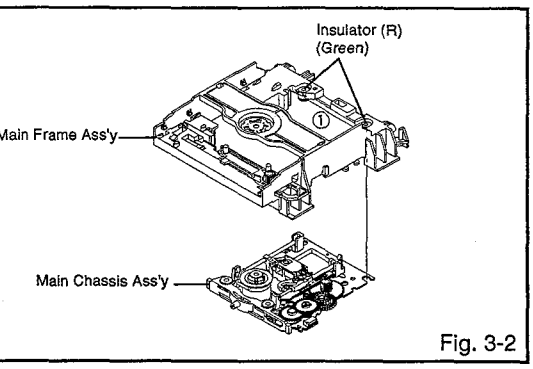


Fig. 3-2

3-3: RACK LOADING/MAIN GEAR/ RACK LOADING SPRING (Refer to Fig. 3-3)

1. Press down the catcher ① and slide the Rack Loading.
2. Remove the Rack Loading, Rack Loading Spring and Main Gear.

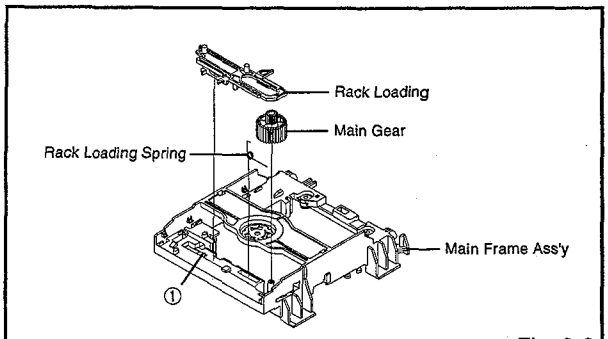


Fig. 3-3

3-4: CLAMPER ASS'Y/INSULATOR(R)/LEVER SWITCH (Refer to Fig. 3-4-A)

1. Remove the screw ①.
2. Remove the Lever Switch.
3. Remove the 2 Insulator (R).
4. Press the Clamper and rotate the Clamper Plate clockwise, then unlock the 3 supports ②.
5. Remove the Clamper Plate, Clamper Magnet and Clamper.

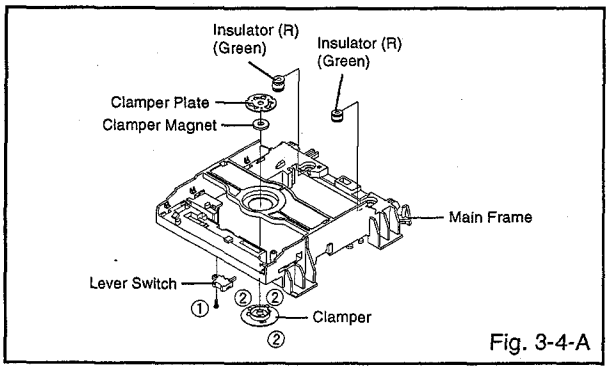


Fig. 3-4-A

NOTE

1. When installing the Clamper Magnet, install it with the green face up.
2. When installing the wire of the Lever Switch, install it correctly as Fig. 3-4-B.
3. When installing the Lever Switch, install it correctly as Fig. 3-4-C.
4. In case of the Lever Switch installation, hook the wire on the Main Frame as shown Fig. 3-4-D.

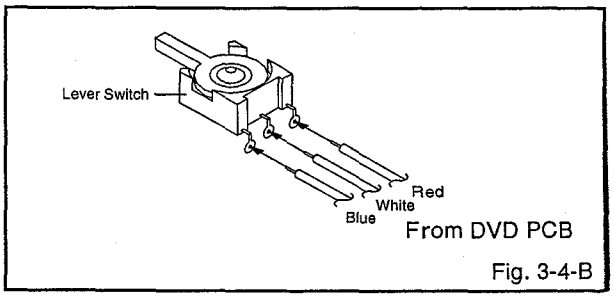


Fig. 3-4-B

DISASSEMBLY INSTRUCTIONS

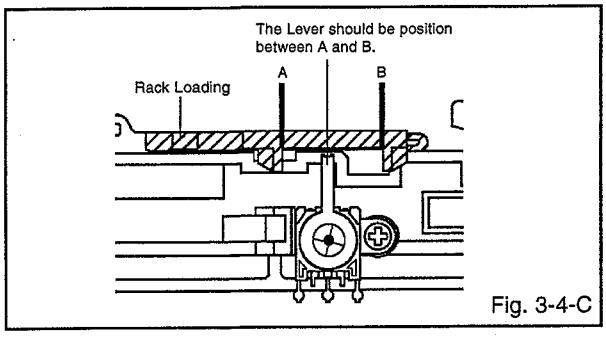


Fig. 3-4-C

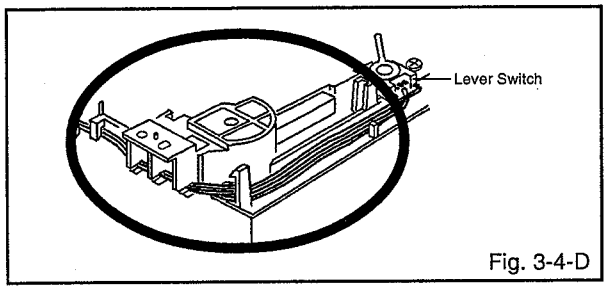


Fig. 3-4-D

3-5: TRAVERSE HOLDER/INSULATOR (F) (Refer to Fig. 3-5-A)

1. Remove the Traverse Holder.
2. Remove the 2 Insulator (F).

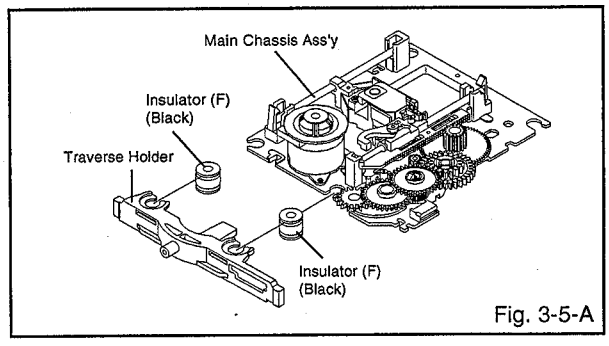


Fig. 3-5-A

NOTE

1. After the installing of the Traverse Holder, check if the wire is like Fig. 3-5-B.

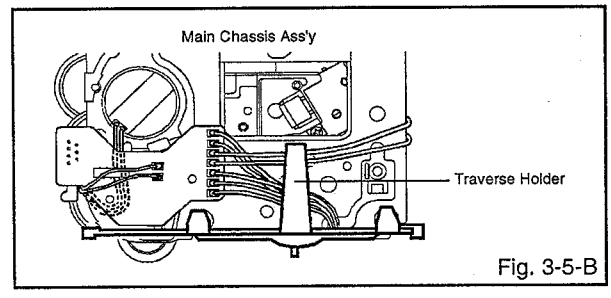


Fig. 3-5-B

3-6: SWITCH PCB ASS'Y (Refer to Fig. 3-6-A)

1. Remove the screw ①.
2. Remove the Switch PCB Ass'y.

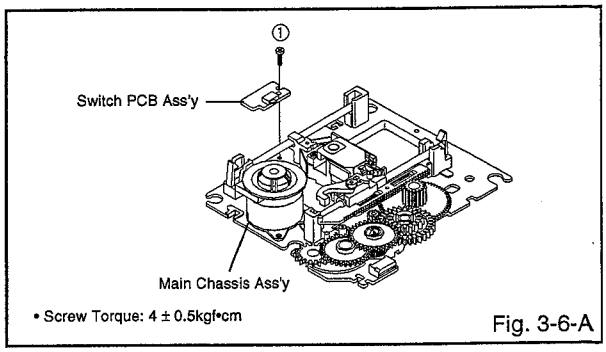


Fig. 3-6-A

NOTE

1. When installing the wire of the Switch PCB, install it correctly as Fig. 3-6-B.

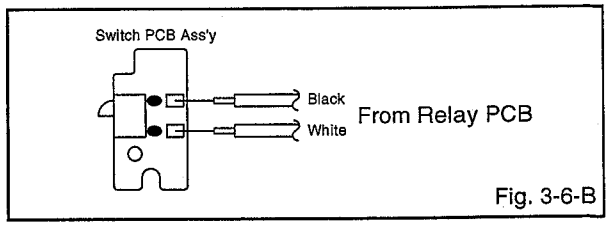


Fig. 3-6-B

3-7: RACK FEED ASS'Y (Refer to Fig. 3-7-A)

1. Remove the screw ①.
2. Remove the Rack Feed 1/2 Spring, Rack Feed 1/2 and Rack Feed Lever.

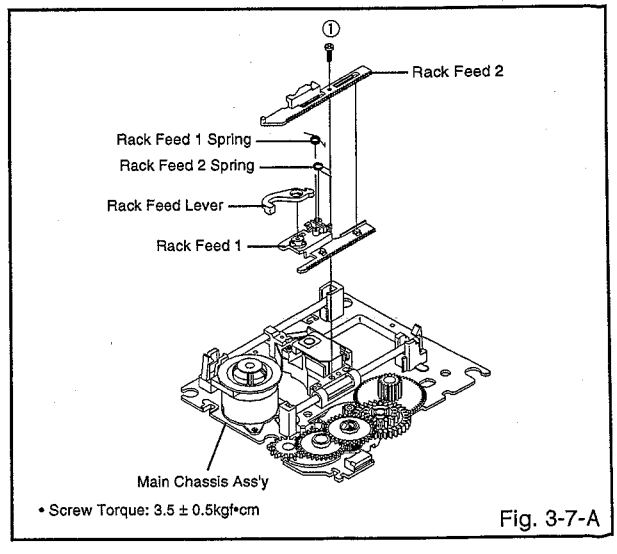


Fig. 3-7-A

NOTE

1. After the assembly of the Rack Feed, check if the Rack Feed 1/2 is moving smoothly. **(Refer to Fig. 3-7-B)**
2. In case of the Rack Feed Ass'y installation, install correctly as Fig. 3-7-C.

DISASSEMBLY INSTRUCTIONS

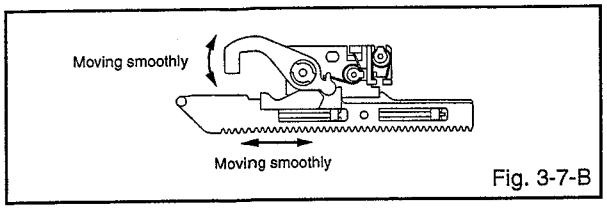


Fig. 3-7-B

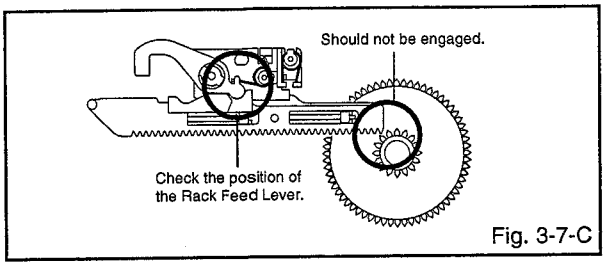


Fig. 3-7-C

3-8: RELAY PCB ASS'Y (Refer to Fig. 3-8-A)

1. Remove the screw ①.
2. Remove the Relay PCB Ass'y.

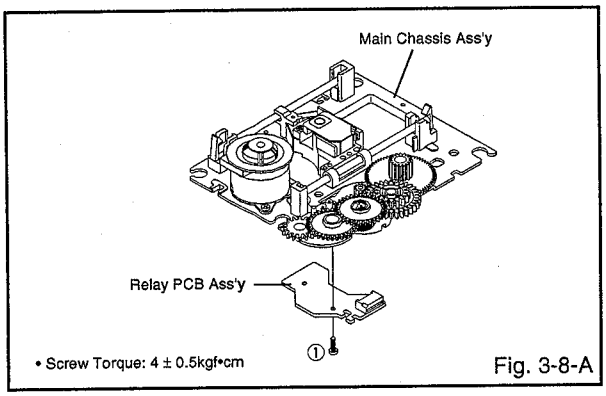


Fig. 3-8-A

NOTE

1. When installing the wire of the Relay PCB, install it correctly as Fig. 3-8-B.

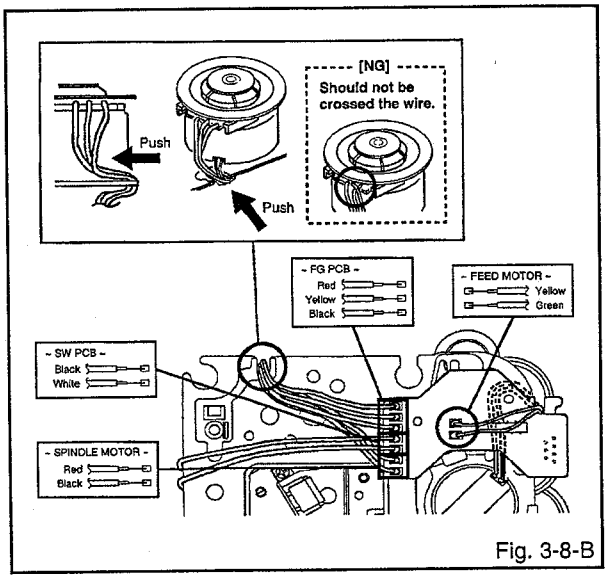


Fig. 3-8-B

3-9: GEAR (Refer to Fig. 3-9-A)

1. Unlock the support ①.
2. Remove the Middle Gear 1/2/3, Idler Gear and Feed Gear.

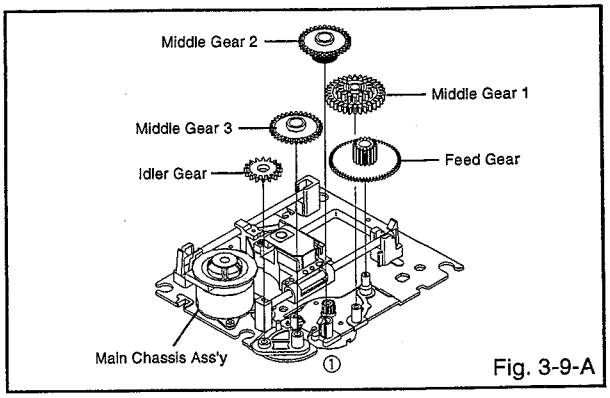


Fig. 3-9-A

NOTE

1. In case of the Idler Gear installation, install correctly as Fig. 3-9-B.
2. When installing the Middle Gear 2, check if the Middle Gear 2 is locked correctly as Fig. 3-9-C.

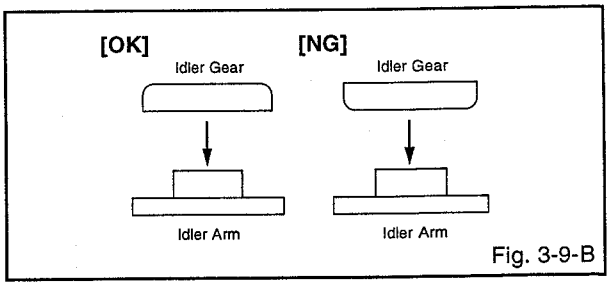


Fig. 3-9-B

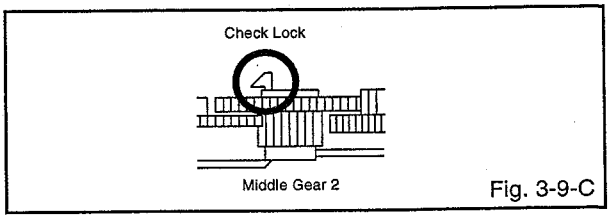


Fig. 3-9-C

3-10: IDLER ARM (Refer to Fig. 3-10-A)

1. Remove the Idler Arm Spring.
2. Remove the Chassis Spring.
3. Remove the Idler Arm.

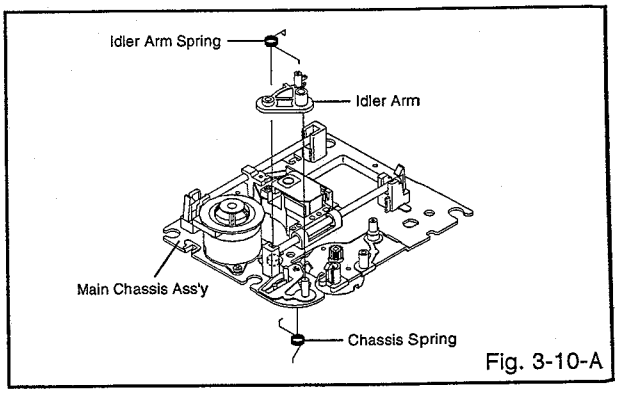


Fig. 3-10-A

DISASSEMBLY INSTRUCTIONS

NOTE

1. In case of the Idler Arm installation, install as the circled section of Fig. 3-10-B.
2. In case of the Idler Arm Spring installation, install as the circled section of Fig. 3-10-C.
3. In case of the Chassis Spring installation, install as the circled section of Fig. 3-10-D.

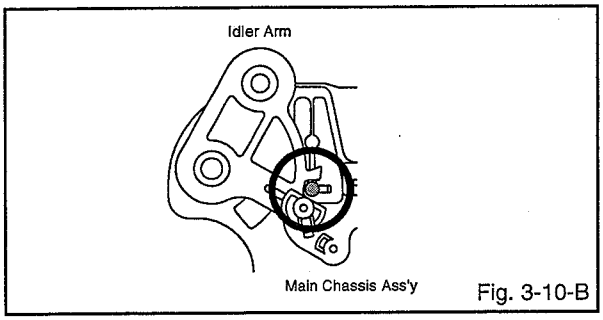


Fig. 3-10-B

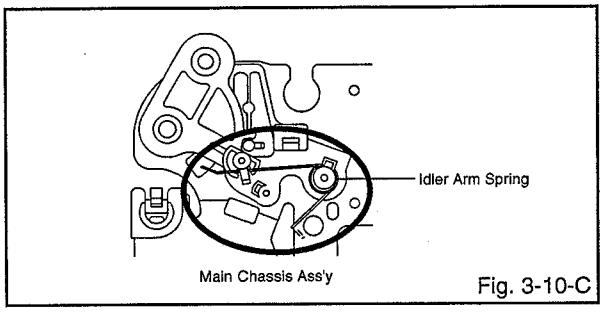


Fig. 3-10-C

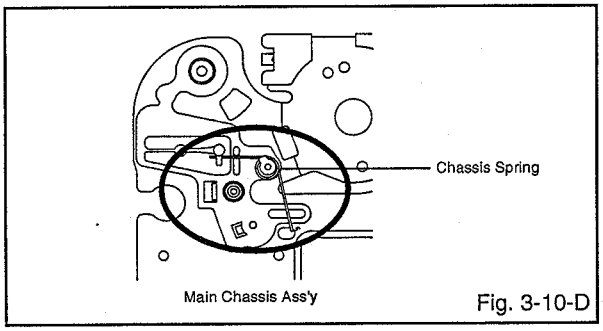


Fig. 3-10-D

3-11: FEED MOTOR (Refer to Fig. 3-11-A)

1. Remove the 2 screws ①.
2. Remove the Feed Motor.
3. Remove the Motor Gear.

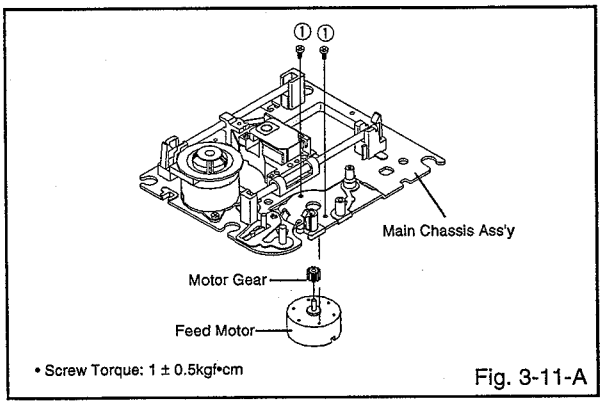


Fig. 3-11-A

NOTE

1. In case of the Motor Gear installation, check if the value of the Fig. 3-11-B is correct.
2. When installing the Feed Motor, check if the cable is positioned as Fig. 3-11-C.

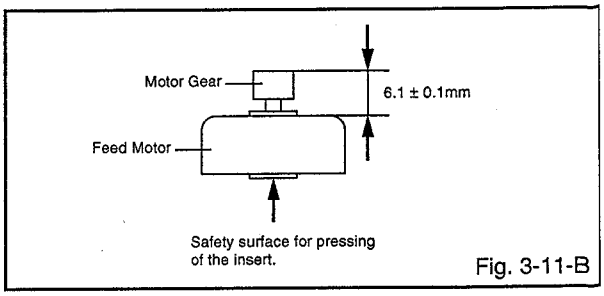


Fig. 3-11-B

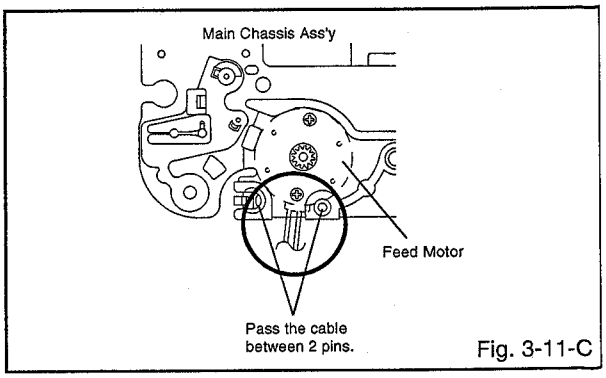


Fig. 3-11-C

DISASSEMBLY INSTRUCTIONS

4. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

* After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
* Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

REMOVAL

1. Follow the steps as follows to discharge the Anode Cap. **(Refer to Fig. 4-1.)**
   Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground.
   While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver.
   A cracking noise will be heard as the voltage is discharged.

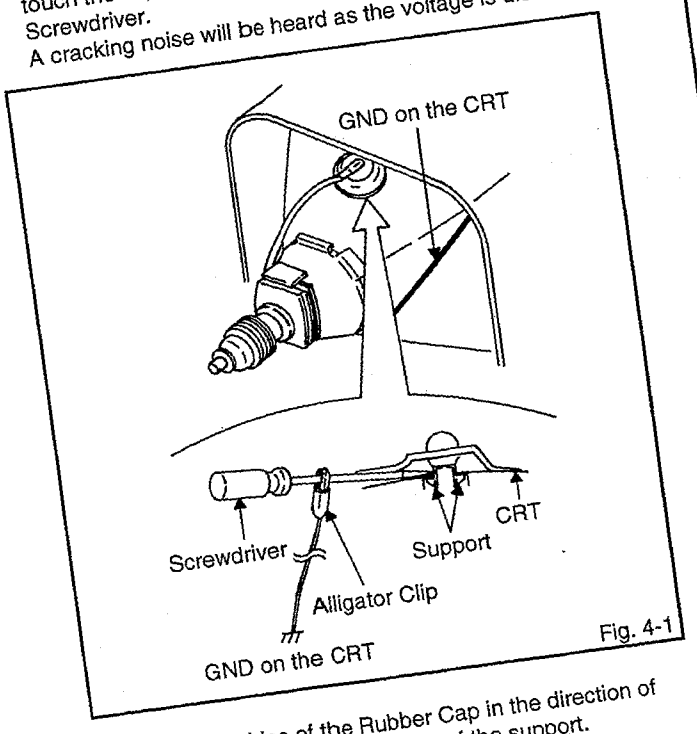


Fig. 4-1

2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support. **(Refer to Fig. 4-2.)**

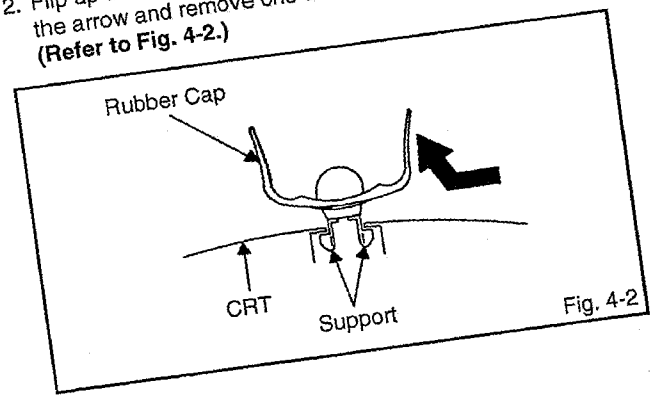


Fig. 4-2

3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

1. Clean the spot where the cap was located with a small amount of alcohol. **(Refer to Fig. 4-3.)**

NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

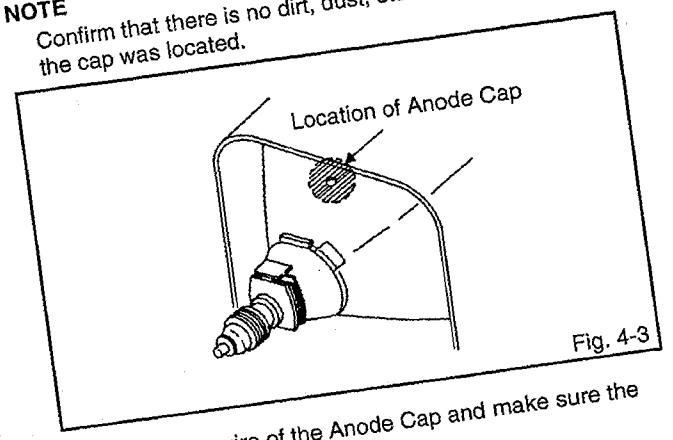


Fig. 4-3

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. **(Refer to Fig. 4-4.)**

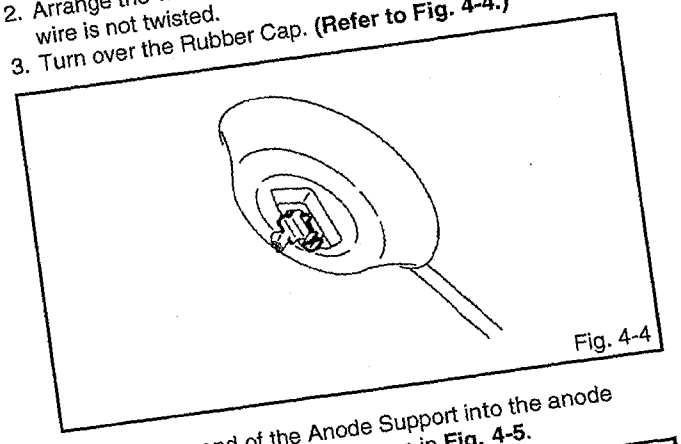


Fig. 4-4

4. Insert one end of the Anode Support into the anode button, then the other as shown in **Fig. 4-5.**

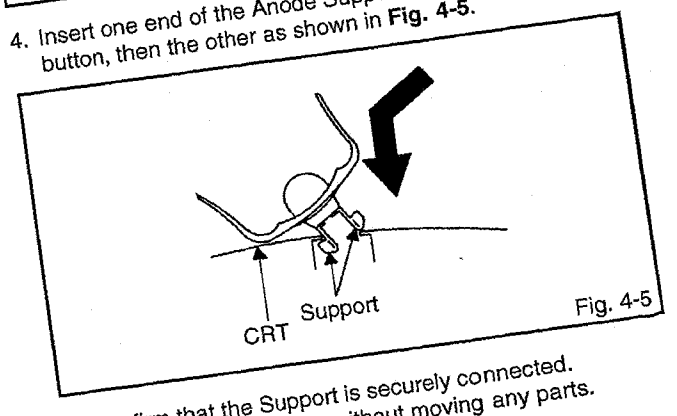


Fig. 4-5

5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

DISASSEMBLY INSTRUCTIONS

5. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put the Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. **(Refer to Fig. 5-1.)**

   NOTE

   Masking is carried out on all the parts located within 10 mm distance from IC leads.

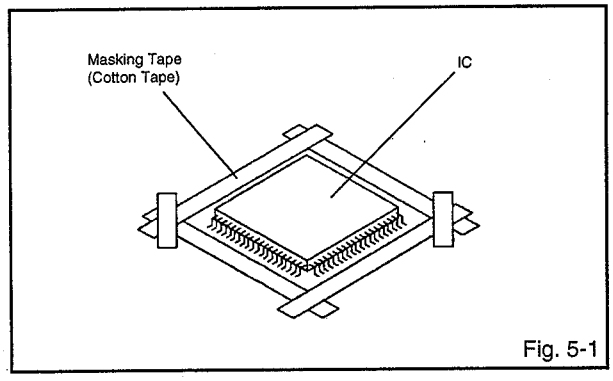


Fig. 5-1

2. Heat the IC leads using a blower type IC desoldering machine. **(Refer to Fig. 5-2.)**

   NOTE

   Do not add the rotating and the back and forth directions force on the IC, until IC can move back and forth easily after desoldering the IC leads completely.

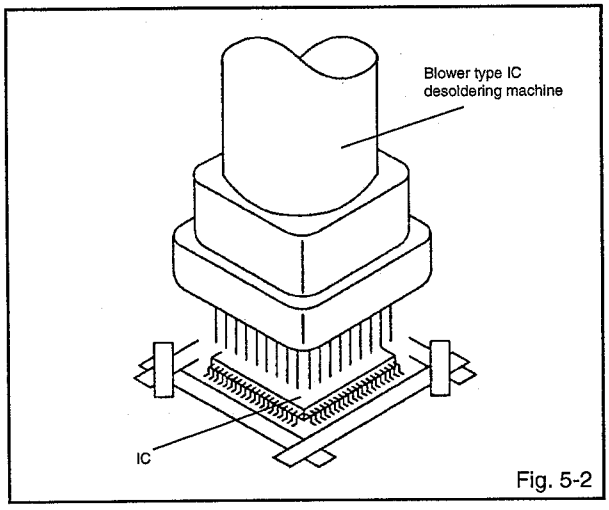


Fig. 5-2

3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. **(Refer to Fig. 5-3.)**

   NOTE

   Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.

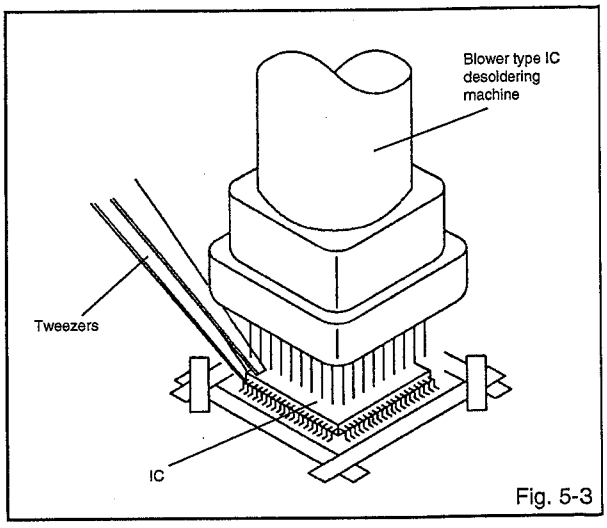


Fig. 5-3

4. Peel off the Masking Tape.

5. Absorb the solder left on the pattern using the Braided Shield Wire. **(Refer to Fig. 5-4.)**

   NOTE

   Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.

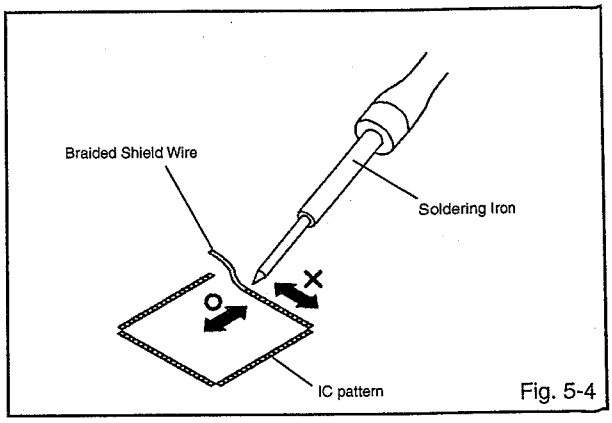


Fig. 5-4

DISASSEMBLY INSTRUCTIONS

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. **(Refer to Fig. 5-5.)**

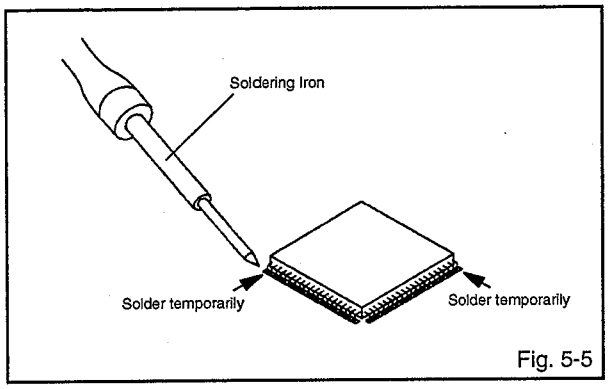


Fig. 5-5

2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. **(Refer to Fig. 5-6.)**

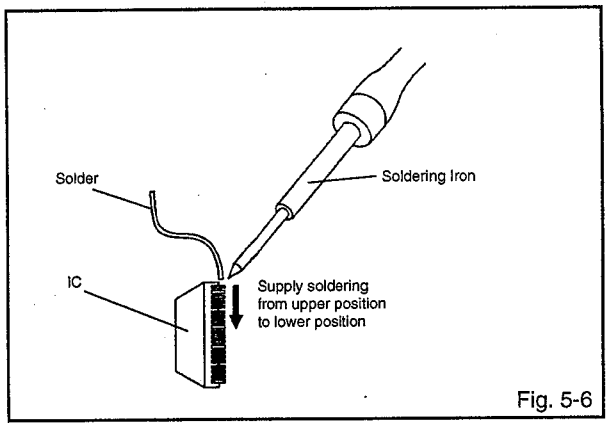


Fig. 5-6

3. Absorb the solder left on the lead using the Braided Shield Wire. **(Refer to Fig. 5-7.)**

NOTE

Do not absorb the solder to excess.

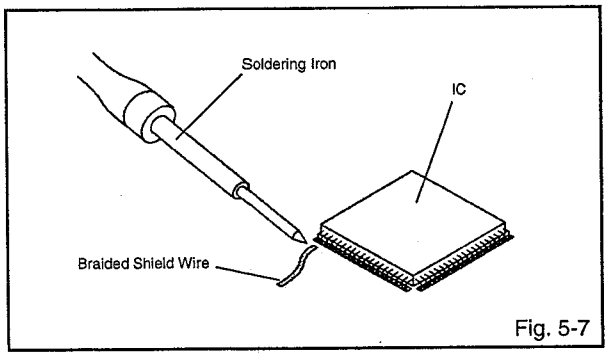


Fig. 5-7

4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. **(Refer to Fig. 5-8.)**

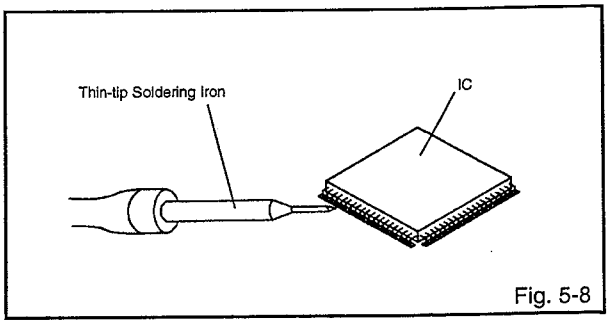


Fig. 5-8

5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass.
Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

NOTE

When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, be always sure to replace the IC in this case.

KEY TO ABBREVIATIONS

A	A/C	:	Audio/Control
	ACC	:	Automatic Color Control
	AE	:	Audio Erase
	AFC	:	Automatic Frequency Control
	AFT	:	Automatic Fine Tuning
	AFT DET	:	Automatic Fine Tuning Detect
	AGC	:	Automatic Gain Control
	AMP	:	Amplifier
	ANT	:	Antenna
	A.PB	:	Audio Playback
	APC	:	Automatic Phase Control
	ASS'Y	:	Assembly
	AT	:	All Time
	AUTO	:	Automatic
	A/V	:	Audio/Video
B	BGP	:	Burst Gate Pulse
	BOT	:	Beginning of Tape
	BPF	:	Bandpass Filter
	BRAKE SOL	:	Brake Solenoid
	BUFF	:	Buffer
	B/W	:	Black and White
C	C	:	Capacitance, Collector
	CASE	:	Cassette
	CAP	:	Capstan
	CARR	:	Carrier
	CH	:	Channel
	CLK	:	Clock
	CLOCK (SY-SE)	:	Clock (Syscon to Servo)
	COMB	:	Combination, Comb Filter
	CONV	:	Converter
	CPM	:	Capstan Motor
	CTL	:	Control
	CYL	:	Cylinder
	CYL-M	:	Cylinder-Motor
	CYL SENS	:	Cylinder-Sensor
D	DATA (SY-CE)	:	Data (Syscon to Servo)
	dB	:	Decibel
	DC	:	Direct Current
	DD Unit	:	Direct Drive Motor Unit
	DEMOD	:	Demodulator
	DET	:	Detector
	DEV	:	Deviation
E	E	:	Emitter
	EF	:	Emitter Follower
	EMPH	:	Emphasis
	ENC	:	Encoder
	ENV	:	Envelope
	EOT	:	End of Tape
	EQ	:	Equalizer
	EXT	:	External
F	F	:	Fuse
	FBC	:	Feed Back Clamp
	FE	:	Full Erase
	FF	:	Fast Forward, Flipflop
	FG	:	Frequency Generator
	FL SW	:	Front Loading Switch
	FM	:	Frequency Modulation
	FSC	:	Frequency Sub Carrier
	FWD	:	Forward
G	GEN	:	Generator
	GND	:	Ground
H	H.P.F	:	High Pass Filter
	H.SW	:	Head Switch
	Hz	:	Hertz
I	IC	:	Integrated Circuit
	IF	:	Intermediate Frequency
	IND	:	Indicator
	INV	:	Inverter
K	KIL	:	Killer
L	L	:	Left
	LED	:	Light Emitting Diode
	LIMIT AMP	:	Limiter Amplifier
	LM, LDM	:	Loading Motor
	LP	:	Long Play
	L.P.F	:	Low Pass Filter
	LUMI.	:	Luminance
M	M	:	Motor
	MAX	:	Maximum
	MINI	:	Minimum
	MIX	:	Mixer, mixing
	MM	:	Monostable Multivibrator
	MOD	:	Modulator, Modulation
	MPX	:	Multiplexer, Multiplex
	MS SW	:	Mecha State Switch
N	NC	:	Non Connection
	NR	:	Noise Reduction
O	OSC	:	Oscillator
	OPE	:	Operation
P	PB	:	Playback
	PB CTL	:	Playback Control
	PB-C	:	Playback-Chrominance
	PB-Y	:	Playback-Luminance
	PCB	:	Printed Circuit Board
	P. CON	:	Power Control
	PD	:	Phase Detector
	PG	:	Pulse Generator
	P-P	:	Peak-to Peak
R	R	:	Right
	REC	:	Recording
	REC-C	:	Recording-Chrominance
	REC-Y	:	Recording-Luminance
	REEL BRK	:	Reel Brake
	REEL S	:	Reel Sensor
	REF	:	Reference
	REG	:	Regulated, Regulator
	REW	:	Rewind
	REV, RVS	:	Reverse
	RF	:	Radio Frequency
	RMC	:	Remote Control
	RY	:	Relay
S	S. CLK	:	Serial Clock
	S. COM	:	Sensor Common
	S. DATA	:	Serial Data
	SEG	:	Segment
	SEL	:	Select, Selector
	SENS	:	Sensor
	SER	:	Search Mode
	SI	:	Serial Input
	SIF	:	Sound Intermediate Frequency
	SO	:	Serial Output
	SOL	:	Solenoid
	SP	:	Standard Play
	STB	:	Serial Strobe
	SW	:	Switch

KEY TO ABBREVIATIONS

S	**SYNC**	:	Synchronization
	SYNC SEP	:	Sync Separator, Separation
T	**TR**	:	Transistor
	TRAC	:	Tracking
	TRICK PB	:	Trick Playback
	TP	:	Test Point
U	**UNREG**	:	Unregulated
V	**V**	:	Volt
	VCO	:	Voltage Controlled Oscillator
	VIF	:	Video Intermediate Frequency
	VP	:	Vertical Pulse, Voltage Display
	V.PB	:	Video Playback
	VR	:	Variable Resistor
	V.REC	:	Video Recording
	VSF	:	Visual Search Fast Forward
	VSR	:	Visual Search Rewind
	VSS	:	Voltage Super Source
	V-SYNC	:	Vertical-Synchronization
	VT	:	Voltage Tuning
X	**X'TAL**	:	Crystal
Y	**Y/C**	:	Luminance/Chrominance

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.

To enter to the SERVICE MODE function, press and hold both buttons simultaneously on the main unit or on the main unit and on the remote control for more than a standard time (second).

The both pressing of set key and remote control key will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 30 minutes before Power On or alternatively, discharge backup capacitor.

Set Key	Remocon Key	Standard Time (seconds)	Operations
VOL. (-) MIN	1	2	Initialization of the factory. NOTE: Do not use this for the normal servicing. If you set a factory initialization, the memories are reset such as the clock setting, the channel setting, the POWER ON total hours, and PLAY/REC total hours.
VOL. (-) MIN	2	2	Horizontal position adjustment of OSD. NOTE: Also can be adjusted by using the Adjustment MENU. Refer to the "ELECTRICAL ADJUSTMENT" (OSD HORIZONTAL).
VOL. (-) MIN	3	2	Adjust the PG SHIFTER automatically. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	4	2	Adjust the PG SHIFTER manually. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	5	2	Adjusting of the Tracking to the center position. NOTE: Also can be adjusted by pressing the ATR button for more than 2 seconds during PLAY.
VOL. (-) MIN	6	2	POWER ON total hours and PLAY/REC total hours are displayed on the screen. Refer to the "PREVENTIVE CHECKS AND SERVICE INTERVALS" (CONFIRMATION OF USING HOURS). Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "NOTE FOR THE REPLACING OF MEMORY IC".
VOL. (-) MIN	7	2	Releasing of PROTECTION PASSWORD.
VOL. (-) MIN	8	2	Writing of EEPROM initial data. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	9	2	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).
REC/OTR	4	2	Initialization of the factory on DVD. NOTE: Do not use this for the normal servicing. The function will only work without the setting of DVD disc at DVD mode. While pressing the Remocon Key for more than the Standard Time, press the Set Key simultaneously.
STOP (DVD)	7	3	Releasing of PARENTAL LOCK. Refer to the "PARENTAL CONTROL - RATING LEVEL". NOTE: The function will only work without the setting of DVD disc at DVD mode.

Method	Operations
Press the ATR button on the remote control for more than 2 seconds during PLAY.	Adjusting of the Tracking to the center position. Refer to the "MECHANICAL ADJUSTMENT" (GUIDE ROLLER) and "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
Make the short circuit between the test point of SERVICE and the GND.	The BOT, EOT, and the Reel Sensor do not work and the VCR deck can be operated without a cassette tape. Refer to the "PREPARATION FOR SERVICING"

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage.
Parts replacing time does not mean the life span for individual parts.
Also, long term storage or misuse may cause transformation and aging of rubber parts.
The following list means standard hours, so the checking hours depends on the conditions.

Time / Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	2,500 hours	Notes
Audio Control Head	■	■	■	●	●	Clean those parts in contact with the tape.
Full Erase Head (Recorder only)	■	■	■	●	●	
Capstan Belt		●	●	●	●	Clean the rubber, and parts which the rubber touches.
Pinch Roller	■	●	●	●	●	
Capstan DD Unit		●	●	●	●	
Loading Motor					●	
Tension Band		●	●	●	●	
T Brake Band		●	●	●	●	
Clutch Ass'y		●	●	●	●	
Idler Arm Ass'y		●	●	●	●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	●	●	●	●	Clean the Head

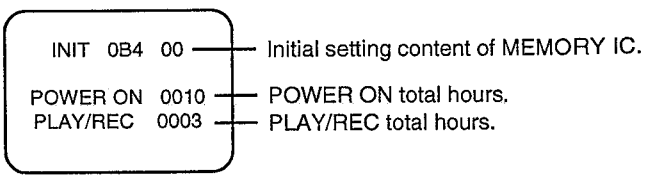
■ : Clean
● : Check it and if necessary, replace it.

CONFIRMATION OF HOURS USED

POWER ON total hours and PLAY/REC total hours can be checked on the screen.
Total hours are displayed in 16 system of notation.

NOTE: If you set a factory initialization, the total hours is reset to "0".
Initial Data setting will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 30 minutes before Power On or alternatively, discharge backup capacitor.

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and the Channel button **(6)** on the remote control for more than 2 seconds.
3. After the confirmation of using hours, turn off the power.



(16 x 16 x 16 x thousands digit value) + (16 x 16 x hundreds digit value) + (16 x tens digit value) + (ones digit value)

PREVENTIVE CHECKS AND SERVICE INTERVALS

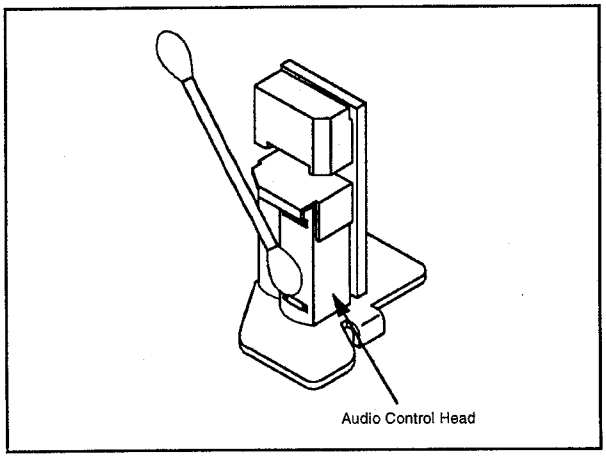
CLEANING

NOTE

After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

Clean the Audio Control Head with the cotton stick soaked by alcohol. Clean the full erase head in the same manner. **(Refer to the figure below.)**



2. TAPE RUNNING SYSTEM

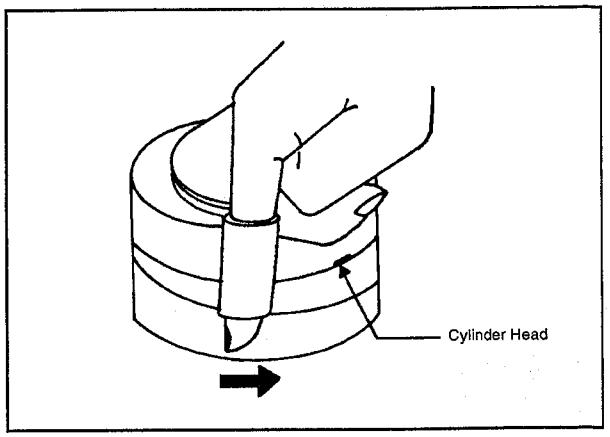
When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). **(Refer to the figure below.)**

NOTE

Do not exert force against the cylinder head. Do not move the chamois upward or downward on the head.
Use the chamois one by one.



WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

NOTE: Initial Data setting will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 30 minutes before Power On or alternatively, discharge backup capacitor.
No need setting for after INI 11F due to the adjustment value.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
0B0	---	---	---	---	00	05	B0	B4	C0	8D	84	AF	C0	E9	45	02
0C0	02	67	D8	A2	D8	01	63	65	66	27	1E	00	2C	00	0E	00
0D0	3A	00	05	00	45	66	64	65	64	CA	00	37	87	A0	87	5F
0E0	00	DB	A0	F9	5F	01	DF	01	F9	6F	9F	B2	9A	97	8C	B2
0F0	A0	C4	20	08	BF	10	2B	B5	C1	41	00	00	00	00	00	00
100	27	03	07	15	08	00	5F	43	DF	12	F9	0F	42	00	B2	00
110	00	07	00	27	44	20	A0	00	00	40	00	00	08	86	30	01

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 2 seconds. ADDRESS and DATA should appear as FIG 1.

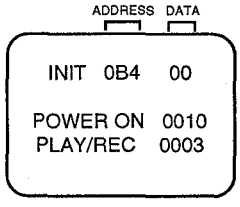


Fig. 1

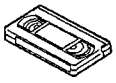
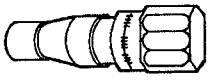
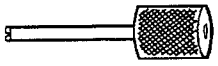
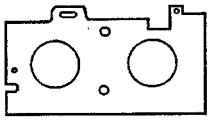
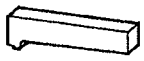
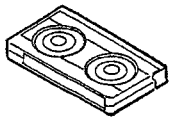
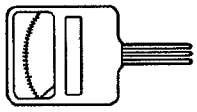
3. ADDRESS is now selected and should "blink". Using the UP/DOWN button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using UP/DOWN button until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

After the data input, set to the initializing of shipping.

9. Turn POWER on.
10. Press both VOL. DOWN button on the set and Channel button **(1)** on the remote control for more than 2 seconds.
11. After the finishing of the initializing of shipping, the unit will turn off automatically.

The unit will now have the correct DATA for the new MEMORY IC.

SERVICING FIXTURES AND TOOLS

(For 2 head 1 speed model, 4 head model) VHS Alignment Tape JG001E (VP_1S-$LI6^3$) JG001F (VP_1S-$CO1^3$) JG001R (VP_1S-$LI6^3H$) JG001U (VP_1S-$X6^3$) 	**(For 2 head 2 speed model)** VHS Alignment Tape JG001C (VP_2S-$LI6^3$) JG001D (VP_2S-$CO1^3$) JG001V (VP_2S-$X6^3$) 	JG002B Adapter JG002E Dial Torque Gauge (10~90gf•cm) JG002F (60~600gf•cm) 	JG005 Post Adjustment Screwdriver Part No. SV-TG0-030-000 (small) 
JG153 X Value Adjustment Screwdriver 	JG022 Master Plane 	JG024A Reel Disk Height Adjustment Jig 	JG100A Torque Tape (VHT-063) 
JG154 Cable 	Tentelometer 		

Ref. No.	Part No.	Parts Name	Remarks
JG001E	APJG001E00	VHS Alignment Tape	Monoscope, 6KHz **(For 2 head 1 speed model, 4 head model)**
JG001F	APJG001F00	VHS Alignment Tape	Color Bar, 1KHz **(For 2 head 1 speed model, 4 head model)**
JG001R	APJG001R00	VHS Alignment Tape	Hi-Fi Audio **(For Hi-Fi model)**
JG001U	APJG001U00	VHS Alignment Tape	X Value Adjustment **(For 2 head 1 speed model, 4 head model)**
JG001C	APJG001C00	VHS Alignment Tape	Monoscope, 6KHz **(For 2 head 2 speed model)**
JG001D	APJG001D00	VHS Alignment Tape	Color Bar, 1KHz **(For 2 head 2 speed model)**
JG001V	APJG001V00	VHS Alignment Tape	X Value Adjustment **(For 2 head 2 speed model)**
JG002B	APJG002B00	Adapter	VSR Torque, Brake Torque (S Reel/T Reel Ass'y)
JG002E	APJG002E00	Dial Torque Gauge (10~90gf•cm)	Brake Torque (T Reel Ass'y)
JG002F	APJG002F00	Dial Torque Gauge (60~600gf•cm)	VSR Torque, Brake Torque (S Reel)
JG005	APJG005000	Post Adjustment Screwdriver	Guide Roller Adjustment
JG153	APJG153000	X Value Adjustment Screwdriver	X Value Adjustment
JG022	APJG022000	Master Plane	Reel Disk Height Adjustment
JG024A	APJG024A00	Reel Disk Height Adjustment Jig	Reel Disk Height Adjustment
JG100A	APJG100A00	Torque Tape (VHT-063)	Playback Torque, Back Tension Torque During Playback
JG154	APJG154000	Cable	Used to connect the test point of SERVICE and GROUND

PREPARATION FOR SERVICING

How to use the Servicing Fixture

1. Remove the TV/VCR/DVD block from the set.
   Be sure to place the parts on a paper so that they have no short-circuit each other.
2. Short circuit between **TP1001** and **Ground** with the cable JG154.
   (The BOT, EOT, and the Reel Sensor do not work and the VCR deck can be operated without a cassette tape.)
3. In case of using a cassette tape, press the STOP/EJECT button to insert or eject a cassette tape.
   Turn on the power and re-check the cable before checking the trouble points.

MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTES before starting work.

- Place an object which weighs between 450g~500g on the Cassette Tape to keep it steady when you want to make the tape run without the Cassette Holder. (Do not place an object which weighs over 500g.)

1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane **(JG022)** and reel disk height adjustment jig **(JG024A)** on the mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A**.
3. While turning the reel and confirm the following points. Check if the surface "A" of reel disk is lower than the surface "B" of reel disk height adjustment jig **(JG024A)** and is higher than the surface "C". If it is not passed, place the height adjustment washers and adjust to 10(+2, -0)mm.
4. Adjust the other reel in the same way.

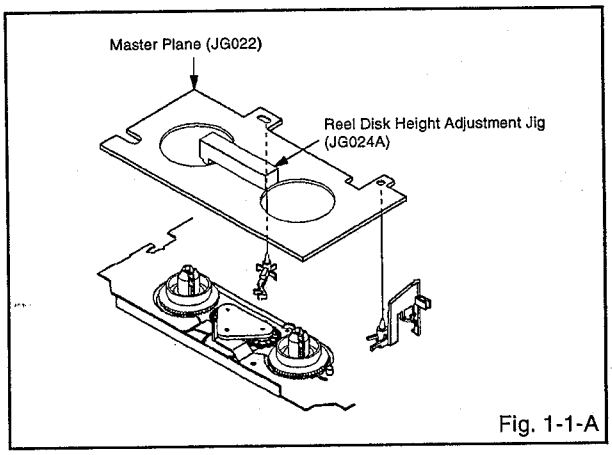


Fig. 1-1-A

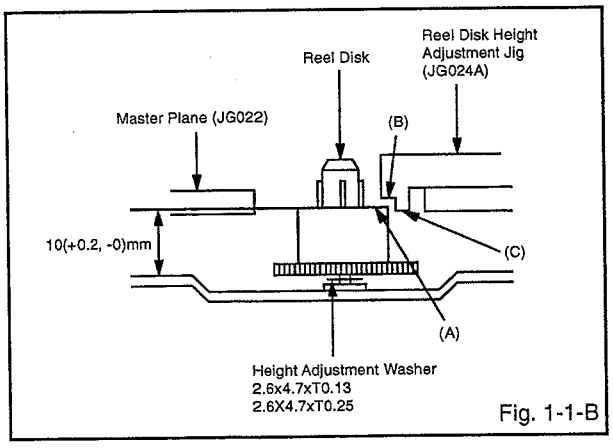


Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Set to the PLAY mode.
2. Adjust the adjusting section for the Tension Arm position so that the Tension Arm top is within the standard line of Main Chassis.
3. While turning the S Reel clockwise, confirm that the edge of the Tension Arm is located in the position described above.

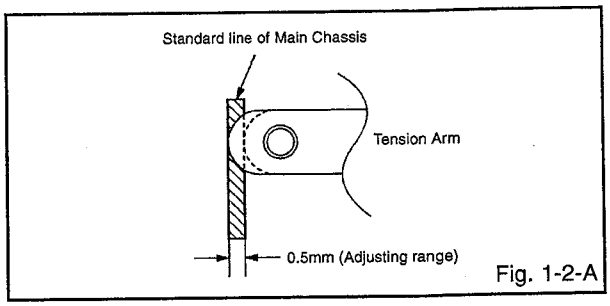
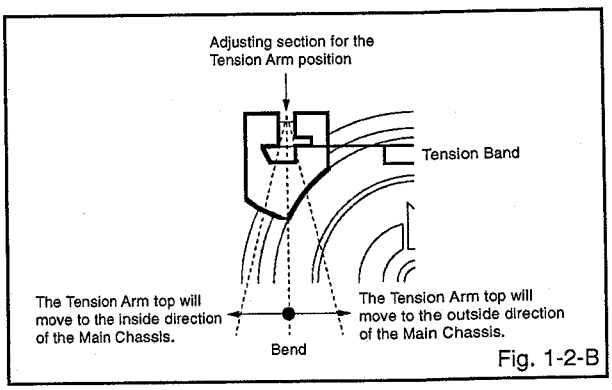


Fig. 1-2-A


Adjusting section for the Tension Arm position
Tension Band
The Tension Arm top will move to the inside direction of the Main Chassis.
Bend
The Tension Arm top will move to the outside direction of the Main Chassis.
Fig. 1-2-B

1-3: CONFIRMATION OF PLAYBACK TORQUE AND BACK TENSION TORQUE DURING PLAYBACK

1. Load a video tape (E-180) recorded in standard speed mode. Set the unit to the PLAY mode.
2. Install the tentelometer as shown in **Fig. 1-3**. Confirm that the meter indicates 20 ± 2gf in the beginning of playback.

• USING A CASSETTE TYPE TORQUE TAPE **(JG100A)**

1. After confirmation and adjustment of Tension Post position **(Refer to item 1-2)**, load the cassette type torque tape **(JG100A)** and set to the PLAY mode.
2. Confirm that the right meter of the torque tape indicates 50~90gf•cm during playback in SP mode.
3. Confirm that the left meter of the torque tape indicates 25~40gf•cm during playback in SP mode.

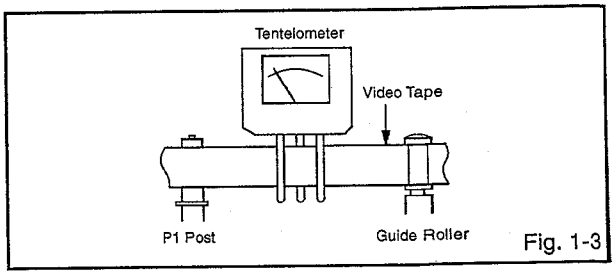


Fig. 1-3

MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF VSR TORQUE

1. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Set to the Picture Search (Rewind) mode. **(Refer to Fig.1-4-B)**
2. Then, confirm that it indicates 120~180gf•cm.

NOTE

Install the Torque Gauge on the reel disk firmly. Press the REW button to turn the reel disk.

1-5: CONFIRMATION OF REEL BRAKE TORQUE

(S Reel Brake) **(Refer to Fig. 1-4-B)**

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of **Fig. 1-4-A.**
2. Move the Idler Ass'y from the S Reel.
3. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Turn the Torque Gauge **(JG002F)** clockwise.
4. Then, confirm that it indicates 60~100gf•cm.

(T Reel Brake) **(Refer to Fig. 1-4-B)**

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of **Fig. 1-4-A.**
2. Move the Idler Ass'y from the T Reel.
3. Install the Torque Gauge **(JG002E)** and Adapter **(JG002B)** on the T reel. Turn the Torque Gauge **(JG002E)** counterclockwise.
4. Then, confirm that it indicates 30~50gf•cm.

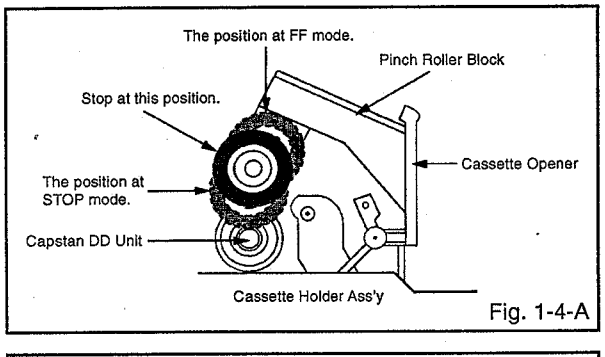


Fig. 1-4-A

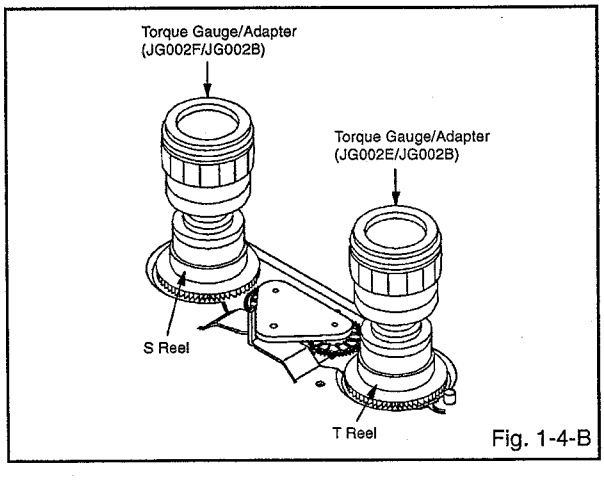


Fig. 1-4-B

NOTE

If the torque is out of the range, replace the following parts.

Check item	Replacement Part
1-4	Idler Ass'y/Clutch Ass'y
1-5	S Reel side: S Reel/Tension Band/Tension Connect/Tension Arm Ass'y T Reel side: T Reel/T Brake Band//T Brake Spring/T Brake Arm

2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

Tape Running Mechanism is adjusted precisely at the factory. Adjustment is not necessary as usual. When you replace the parts of the tape running mechanism because of long term usage or failure, the confirmation and adjustment are necessary.

2-1: GUIDE ROLLER

1. Playback the VHS Alignment Tape **(JG001C or JG001E)**. **(Refer to SERVICING FIXTURE AND TOOLS)**
2. Connect CH-1 of the oscilloscope to **TP4502 (Envelope)** and CH-2 to **TP4501 (SW Pulse)**.
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Trigger with SW Pulse and observe the envelope. **(Refer to Fig. 2-1-A)**
5. When observing the envelope, adjust the Adjusting Driver **(JG005)** slightly until the envelope will be flat. Even if you press the Tracking Button, adjust so that flatness is not moved so much.
6. Adjust so that the A : B ratio is better than 3 : 2 as shown in **Fig. 2-1-B**, even if you press the Tracking Button to move the envelope (The envelope waveform will begin to decrease when you press the Tracking Button).
7. Adjust the PG shifter during playback. **(Refer to the ELECTRICAL ADJUSTMENTS)**

NOTE

After adjustment, confirm and adjust A/C head. **(Refer to item 2-2)**

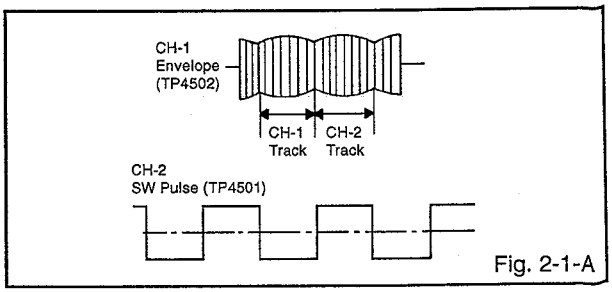


Fig. 2-1-A

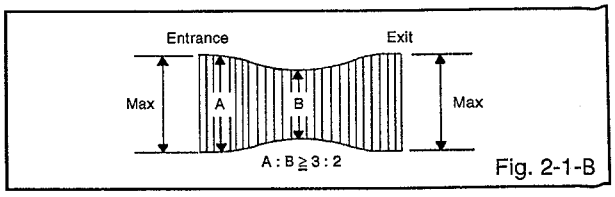


Fig. 2-1-B

MECHANICAL ADJUSTMENTS

2-2: CONFIRMATION AND ADJUSTMENT OF AUDIO/ CONTROL HEAD

When the Tape Running Mechanism does not work well, adjust the following items.

1. Playback the VHS Alignment Tape **(JG001C or JG001E). (Refer to SERVICING FIXTURE AND TOOLS)**
2. Confirm that the reflected picture of stamp mark is appeared on the tape prior to P4 Post as shown in **Fig. 2-2-A.**
   a) When the reflected picture is distorted, turn the screw ① clockwise until the distortion is disappeared.
   b) When the reflected picture is not distorted, turn the screw ① counterclockwise until little distortion is appeared, then adjust the a).
3. Turn the screw ② to set the audio level to maximum.
4. Confirm that the bottom of the Audio/ Control Head and the bottom of the tape is shown in **Fig. 2-2-C.**
   c) When the height is not correct, turn the screw ③ to adjust the height. Then, adjust the 1~3 again.

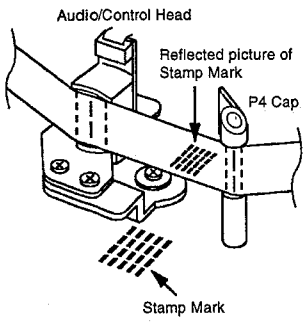


Fig. 2-2-A

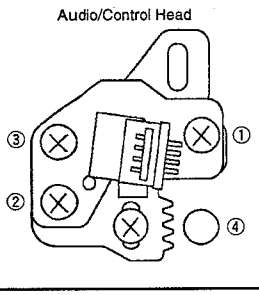


Fig. 2-2-B

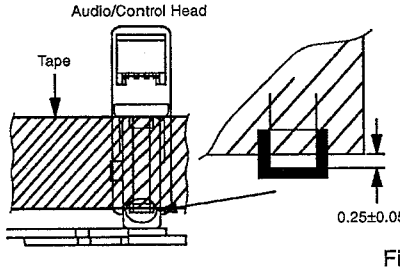


Fig. 2-2-C

2-3: TAPE RUNNING ADJUSTMENT (X VALUE ADJUSTMENT)

1. Confirm and adjust the height of the Reel Disk. **(Refer to item 1-1)**
2. Confirm and adjust the position of the Tension Post. **(Refer to item 1-2)**
3. Adjust the Guide Roller. **(Refer to item 2-1)**
4. Confirm and adjust the Audio/Control Head. **(Refer to item 2-2)**
5. Connect CH-1 of the oscilloscope to **TP4501**, CH-2 to **TP4502** and CH-3 to **HOT side of Audio Out Jack.**
6. Playback the VHS Alignment Tape **(JG001U or JG001V). (Refer to SERVICING FIXTURE AND TOOLS)**
7. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
8. Set the X Value adjustment driver **(JG153)** to the ④ of **Fig. 2-2-B.** Adjust X value so that the envelope waveform output becomes maximum. Check if the relation between Audio and Envelope waveform becomes (1) or (2) of **Fig. 2-3.**

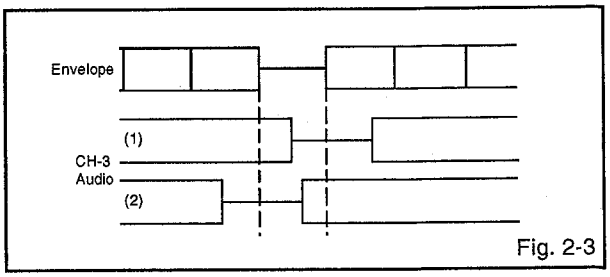


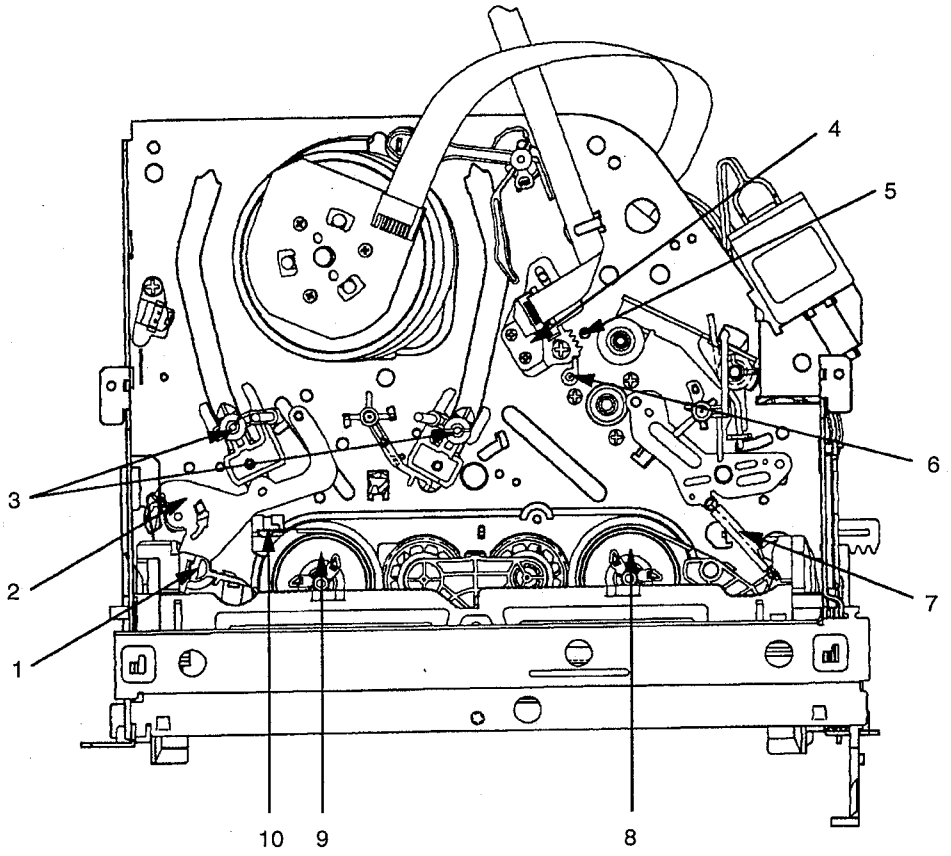
Fig. 2-3

2-4: CONFIRM HI-FI AUDIO (Hi-Fi model only)

1. Connect CH-1 of the oscilloscope to **TP4501** and CH-2 to the **Hi-Fi Audio Out Jack.**
2. Playback the VHS Alignment Tape **(JG001R). (Refer to SERVICING FIXTURE AND TOOLS)**
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Press the Tracking Up button and count number of steps which the audio output is changed from Hi-Fi (10KHz) to MONO (6KHz).
5. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
6. Press the Tracking Down button and count number of steps which the audio output is changed from Hi-Fi (10KHz) to MONO (6KHz).
7. If the difference are more than 3 steps, set the X Value adjustment driver **(JG153)** to ④ of **Fig. 2-2-B.** Change the X Value and adjust it so that the value becomes within 2 steps.

MECHANICAL ADJUSTMENTS

3. MECHANISM ADJUSTMENT PARTS LOCATION GUIDE



1. Tension Connect
2. Tension Arm
3. Guide Roller
4. Audio/Control Head
5. X value adjustment driver hole
6. P4 Post
7. T Brake Spring
8. T Reel
9. S Reel
10. Adjusting section for the Tension Arm position

ELECTRICAL ADJUSTMENTS

1. BEFORE MAKING ELECTRICAL ADJUSTMENTS

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
- When you exchange IC and Transistor for a heat sink, apply the silicon grease **(YG6260M)** on the contact section of the heat sink. Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor).

Prepare the following measurement tools for electrical adjustments.

1. Oscilloscope
2. Digital Voltmeter
3. Multi-sound Generator
4. Pattern Generator

On-Screen Display Adjustment

1. Unplug the AC plug for more than 30 minutes to set the clock to the non-setting state. (To release the Back-Up immediately, take the short circuit between **C1003** and **GND** at the Power Off.) Then, set the volume level to minimum.
2. Press the VOL. DOWN button on the set and the channel button **(9)** on the remote control for more than 2 seconds to display adjustment mode on the screen as shown in **Fig. 1-1**.

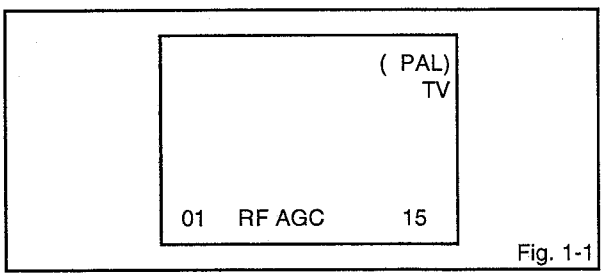


Fig. 1-1

3. Use the UP/DOWN button or Channel button **(0-9)** on the remote control to select the options shown in **Fig. 1-2.**
4. Press the MENU button on the remote control to end the adjustments.

NO.	FUNCTION	NO.	FUNCTION
00	CUT OFF	19	BRIGHT MIN
01	RF AGC	20	CONTRAST CENT
02	AGC GAIN	21	CONTRAST MAX
03	R DRIVE	22	CONTRAST MIN
04	R CUTOFF	23	COLOR CENT
05	G DRIVE	24	COLOR MAX
06	G CUTOFF	25	COLOR MIN
07	B DRIVE	27	SHARP
08	H POSI	28	M R CUT OFF
09	V POSI	29	M G CUT OFF
11	V SIZE	30	M B CUT OFF
13	VCO COARSE	31	H POS OSD
14	VCO FINE	35	CVBS OUT
15	VCO COARSE L1	36	APR THRESHOLD
16	VCO FINE L1	37	BELL FILTER
17	BRIGHT CENT	38	BANDPASS
18	BRIGHT MAX		

Fig. 1-2

2. BASIC ADJUSTMENTS (VCR SECTION)

2-1: PG SHIFTER

1. Playback the alignment tape. **(JG001D)**
2. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
3. Press the VOL. DOWN button on the set and the channel button **(3)** on the remote control simultaneously until the indicator REC disappears. If the indicator REC disappears, adjustment is completed.

(If the above adjustments doesn't work well:)

4. Connect CH-1 on the oscilloscope to **TP4501** and CH-2 to **TP4201.**
5. Press the VOL. DOWN button on the set and the channel button **(3)** on the remote control simultaneously until the indicator REC disappears.
6. When the REC indicator is blinking, press both VOL. DOWN button on the set and the channel button **(4)** on the remote control simultaneously and adjust the Tracking +/- button until the arising to the down of Head Switching Pulse becomes 6.5 ± 0.5H.
   (Refer to Fig. 2-1-A, B)
7. Stop the alignment tape.

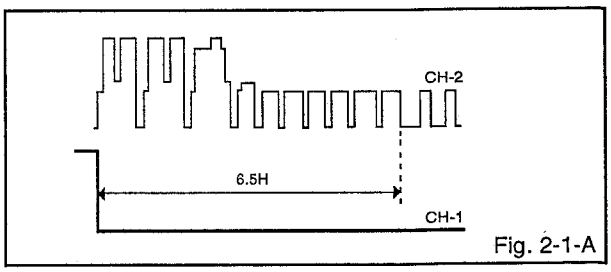


Fig. 2-1-A

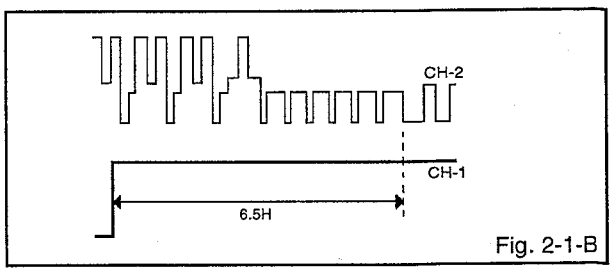


Fig. 2-1-B

2-2: RF AGC

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the VHF HIGH (63dB).
3. Connect the digital voltmeter between the **pin 5 of CP603** and the **pin 1 (GND) of CP603.**
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(01)** on the remote control to select "RF AGC".
5. Press the RIGHT/LEFT button on the remote control until the digital voltmeter is 2.6 ± 0.05V.

ELECTRICAL ADJUSTMENTS

2-3: VCO

1. Place the set with Aging Test for more than 10 minutes.
2. Connect the oscillator (38.9MHz) to **TP601**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(13)** on the remote control to select "VCO COARSE".
4. Press the RIGHT/LEFT button on the remote control until the "OK" appear on the screen. If the "OK" is not displayed, select the "-" side on the changed from "+" to "-".
5. Press the CH UP button once to set to "VCO FINE" mode.
6. Press the RIGHT/LEFT button on the remote control to select the 4 step down point from the upper limit on the "OK".
   (Example: In case of the "OK" point 30~41, select 37.)
7. Connect the oscillator (33.95MHz) to **TP601**.
   Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(15)** on the remote control to select "VCO COARSE L1".
8. Press the RIGHT/LEFT button on the remote control until the "OK" appear on the screen. If the "OK" is not displayed, select the "-" side on the changed from "+" to "-".
9. Press the CH UP button once to set to "VCO FINE L1" mode.
10. Press the RIGHT/LEFT button on the remote control to select the 5 step down point from the upper limit on the "OK".
    (Example: In case of the "OK" point 30~41, select 36.)

(TV SECTION)

2-4: CONSTANT VOLTAGE

1. Connect the digital voltmeter to **TP401**.
2. Set condition is AV MODE without signal.
3. Using the remote control, set the brightness and contrast to normal position.
4. Adjust the **VR1701** until the digital voltmeter is 135 ± 1V.

2-5: FOCUS

1. Receive a broadcast.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the **Focus Volume** until picture is distinct.

2-6: HORIZONTAL POSITION

1. Receive the monoscope pattern from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(08)** on the remote control to select "H POSI (50)".
4. Press the RIGHT/LEFT button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.
5. Receive the cross hatch signal of NTSC. (Audio Video Input)
6. Press the AV button on the remote control to set to the AV mode.
7. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(08)** on the remote control to select "H POSI (60)".
8. Check if the step No. H. POSI (60) is "26".

2-7: VERTICAL POSITION

NOTE: Adjust after performing adjustments in section 2-6.

1. Receive the monoscope pattern from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(09)** on the remote control to select "V POSI (50)".
4. Check if the step No. V. POSI (50) is "05".
5. Adjust the **VR402** until the horizontal line becomes fit to the notch of the shadow mask.
6. Receive the cross hatch signal of NTSC. (Audio Video Input)
7. Press the AV button on the remote control to set to the AV mode.
8. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(09)** on the remote control to select "V POSI (60)".
9. Check if the step No. V. POSI (60) is "15".

2-8: VERTICAL SIZE

NOTE: Adjust after performing adjustments in section 2-7.

1. Receive the monoscope pattern from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(11)** on the remote control to select "V SIZE (50)".
4. Adjust by using the RIGHT/LEFT button on the remote control so that the Up/Down OVER SCAN Quantity becomes equal to the Right/Left OVER SCAN Quantity.
5. Receive a broadcast and check if the picture is normal.
6. Receive the cross hatch signal of NTSC. (Audio Video Input)
7. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~4.

2-9: VERTICAL LINEARITY

NOTE: Adjust after performing adjustments in section 2-8. After the adjustment of Vertical Linearity, reconfirm the Vertical Position and Vertical Size adjustments.

1. Receive the monoscope pattern from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Adjust the **VR401** until the SHIFT quantity of the OVER SCAN on upside and downside becomes minimum.

ELECTRICAL ADJUSTMENTS

2-10: OSD HORIZONTAL

1. Using the remote control, set the brightness and contrast to normal position.
2. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(31)** on the remote control to select "H POS OSD".
3. Press the RIGHT/LEFT button on the remote control until the difference of A and B becomes minimum. **(Refer to Fig. 2-2)**

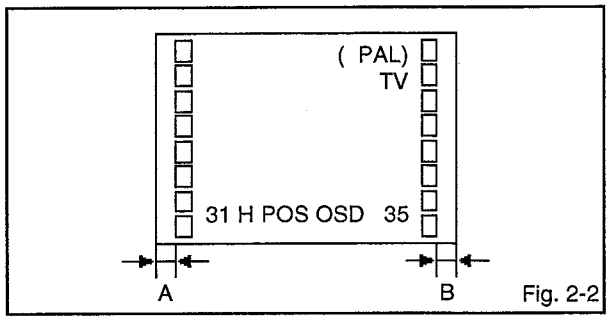


Fig. 2-2

2-11: CUT OFF

1. Set condition is AV MODE without signal.
2. Using the remote control, set the brightness and contrast to normal position.
3. Place the set with Aging Test for more than 15 minutes.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(00)** on the remote control to select "CUT OFF".
5. Adjust the **Screen Volume** until a dim raster is obtained.

2-12: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the gray scale pattern from the Pattern Generator.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(03)** on the remote control to select "R DRIVE".
5. Press the UP/DOWN button on the remote control to select the "R DRIVE", "G DRIVE", "M R CUTOFF" or "M G CUTOFF".
6. Adjust the RIGHT/LEFT button on the remote control to whiten the R DRIVE, G DRIVE, M R CUT OFF, and M G CUT OFF at each step tone sections equally.
7. Perform the above adjustments 5 and 6 until the white color is looked like a white.

2-13: BRIGHT CENT

1. Receive the PAL black pattern*. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(17)** on the remote control to select "BRIGHT CENT".
4. Press the RIGHT/LEFT button on the remote control until the screen begin to shine.
5. Receive the PAL black pattern*. (Audio Video Input)
6. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~4.
7. Press the DVD button on the remote control to set to the DVD mode.
8. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(17)** on the remote control to select "BRIGHT CENT".
9. Press the RIGHT/LEFT button on the remote control to set the same step numbers as the RF.

*The Black Pattern means the whole black raster signal. Select the "RASTER" of the pattern generator, set to the OFF position for each R, G and B.

2-14: CONTRAST CENT

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(20)** on the remote control to select "CONTRAST CENT".
2. Press the RIGHT/LEFT button on the remote control until the contrast step No. becomes "33".
3. Press the AV button on the remote control to set to the AV mode.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(20)** on the remote control to select "CONTRAST CENT".
5. Press the RIGHT/LEFT button on the remote control until the contrast step No. becomes "34".
6. Press the DVD button on the remote control to set to the DVD mode.
7. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(20)** on the remote control to select "CONTRAST CENT".
8. Press the RIGHT/LEFT button on the remote control to set the same step numbers as the RF.

ELECTRICAL ADJUSTMENTS

2-15: COLOR CENT

1. Receive the PAL color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast and color to normal position.
3. Connect the oscilloscope to **TP803**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(23)** on the remote control to select "COLOR CENT".
5. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
6. Press the RIGHT/LEFT button on the remote control until the red color level is adjusted to 90 ± 5% of the white level. **(Refer to Fig. 2-3)**
7. Receive the PAL color bar pattern. (Audio Video Input)
8. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~6.
9. Receive the SECAM color bar pattern. (RF Input) Then perform the above adjustments 2~6.
10. Receive the SECAM color bar pattern. (Audio Video Input)
11. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~6.
12. Press the DVD button on the remote control to set to the DVD mode.
13. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(23)** on the remote control to select "COLOR CENT".
14. Press the RIGHT/LEFT button on the remote control to decrease the step numbers by 5 steps to the RF (PAL).

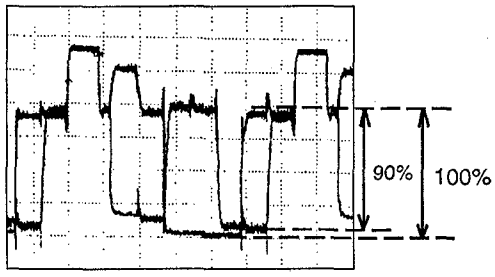


Fig. 2-3

2-16: Confirmation of Fixed Value (Step No.)

Please check if the fixed values of the each adjustment items are set correctly referring below. (RF/AV/DVD)

NO.	FUNCTION	STEP NO.
02	AGC GAIN	00
04	R CUTOFF	31
06	G CUTOFF	31
07	B DRIVE	31
18	BRIGHT MAX	55
19	BRIGHT MIN	20
21	CONTRAST MAX	50
22	CONTRAST MIN	10
24	COLOR MAX	60
25	COLOR MIN	10
27	SHARP	10
30	M B CUT OFF	50
35	CVBS OUT	05
36	APR THRESHOLD	07
37	BELL FILTER	10
38	BANDPASS	00

ELECTRICAL ADJUSTMENTS

3. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 3-1)**
   If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

3-2: PURITY

NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
   Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue color.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

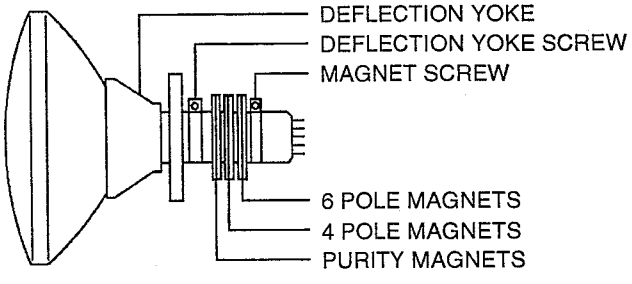


Fig. 3-1

3-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-2.

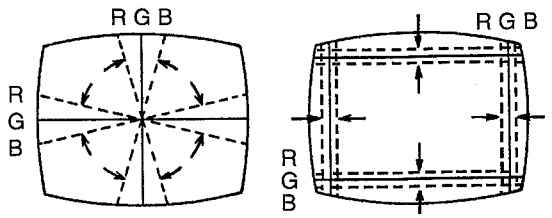
1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

3-4: DYNAMIC CONVERGENCE

NOTE

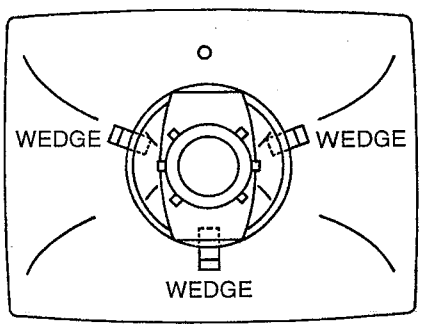
Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 3-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 3-2-b)**



UPWARD/DOWNWARD SLANT RIGHT/LEFT SLANT

Fig. 3-2-a

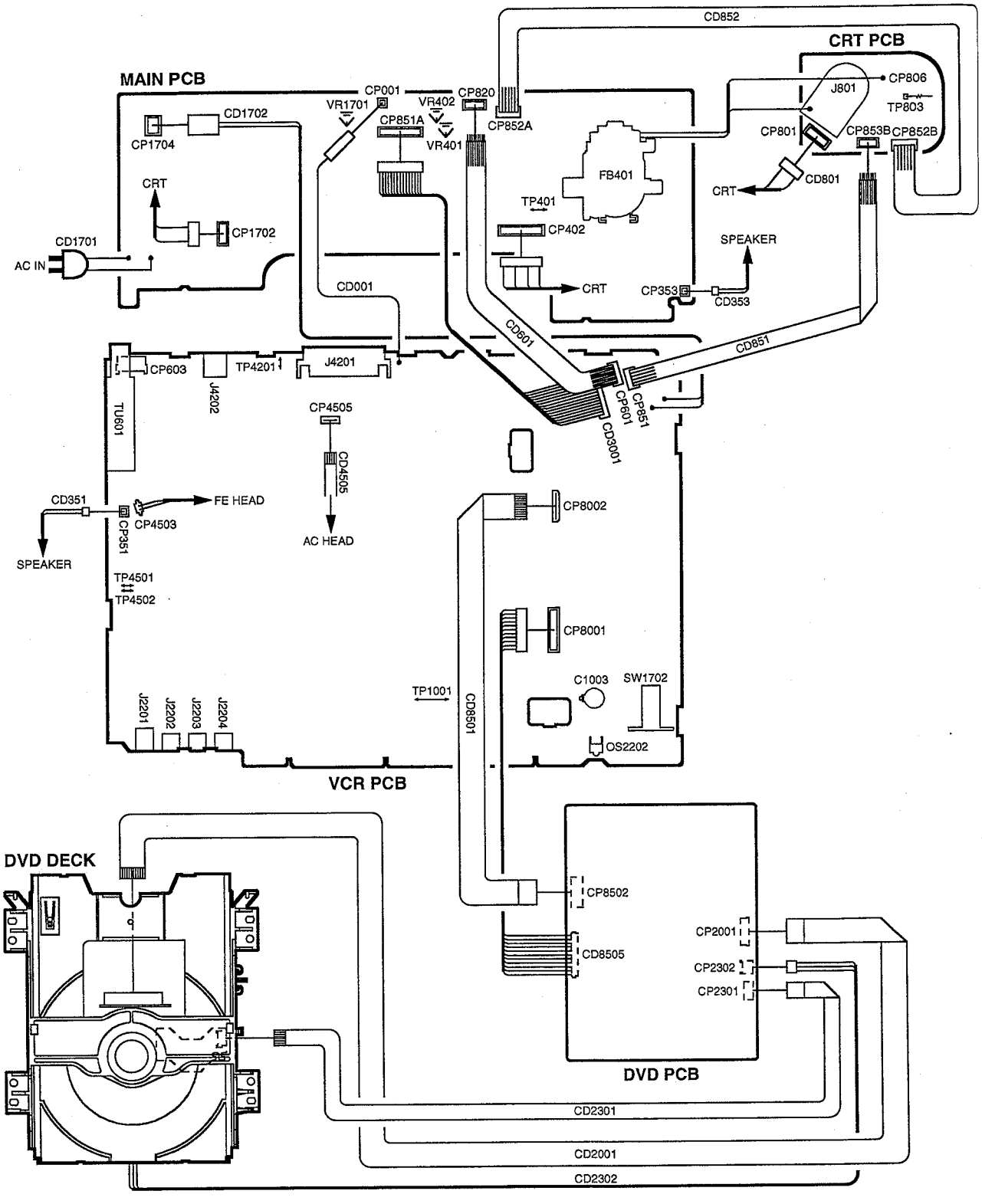


WEDGE POSITION

Fig. 3-2-b

ELECTRICAL ADJUSTMENTS

4. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)



SERVICE MANUAL

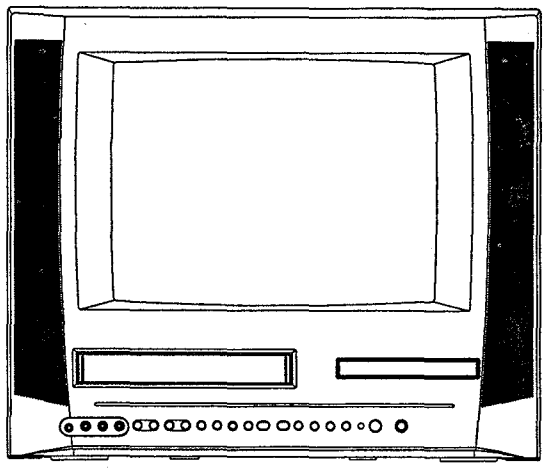
Teil 2

ORION

COMBI 1415SI / BSI

COLOR TELEVISION/VIDEO CASSETTE RECORDER/ DVD VIDEO PLAYER

CLASS 1
LASER PRODUCT

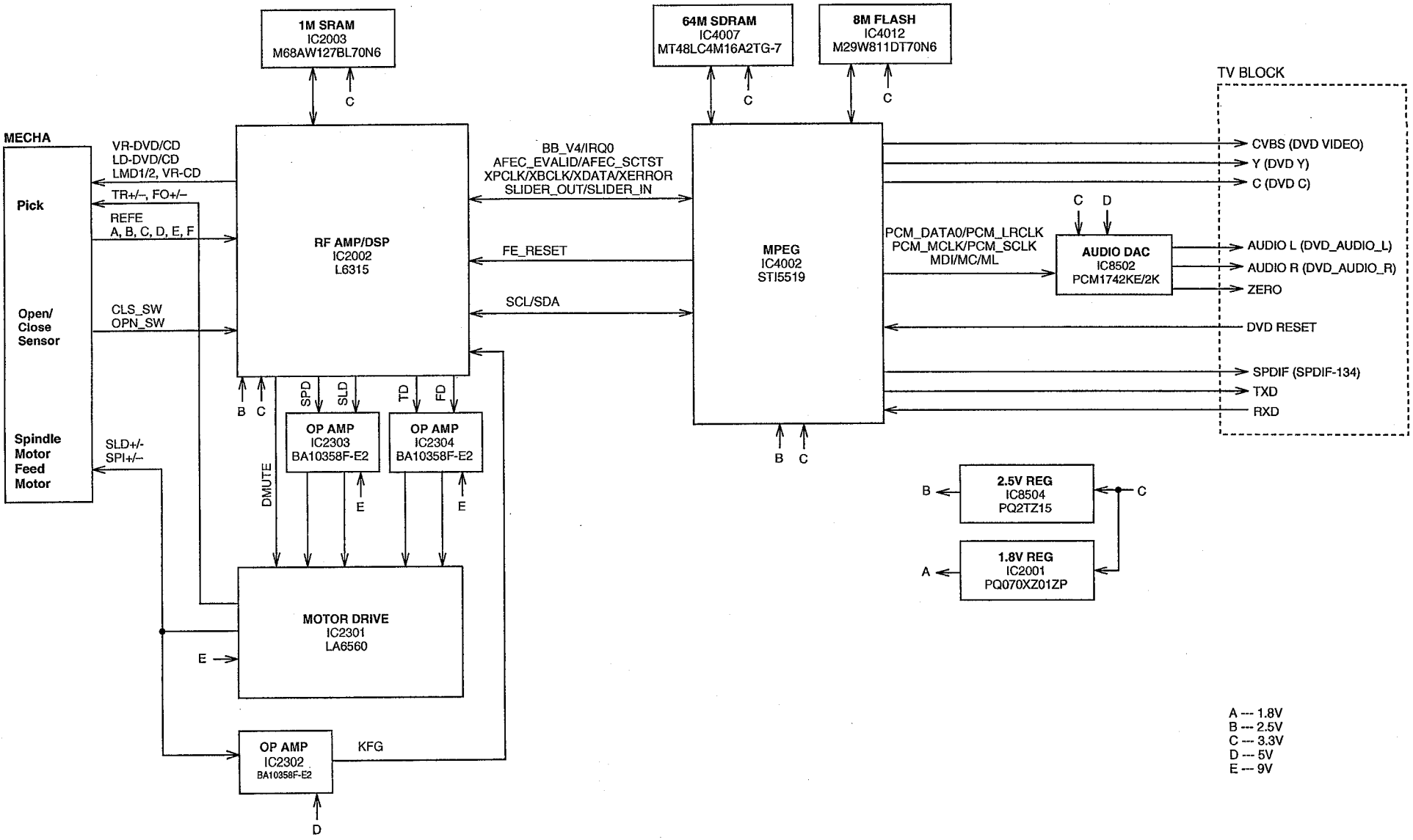


ORIGINAL
CHASSIS CODE A

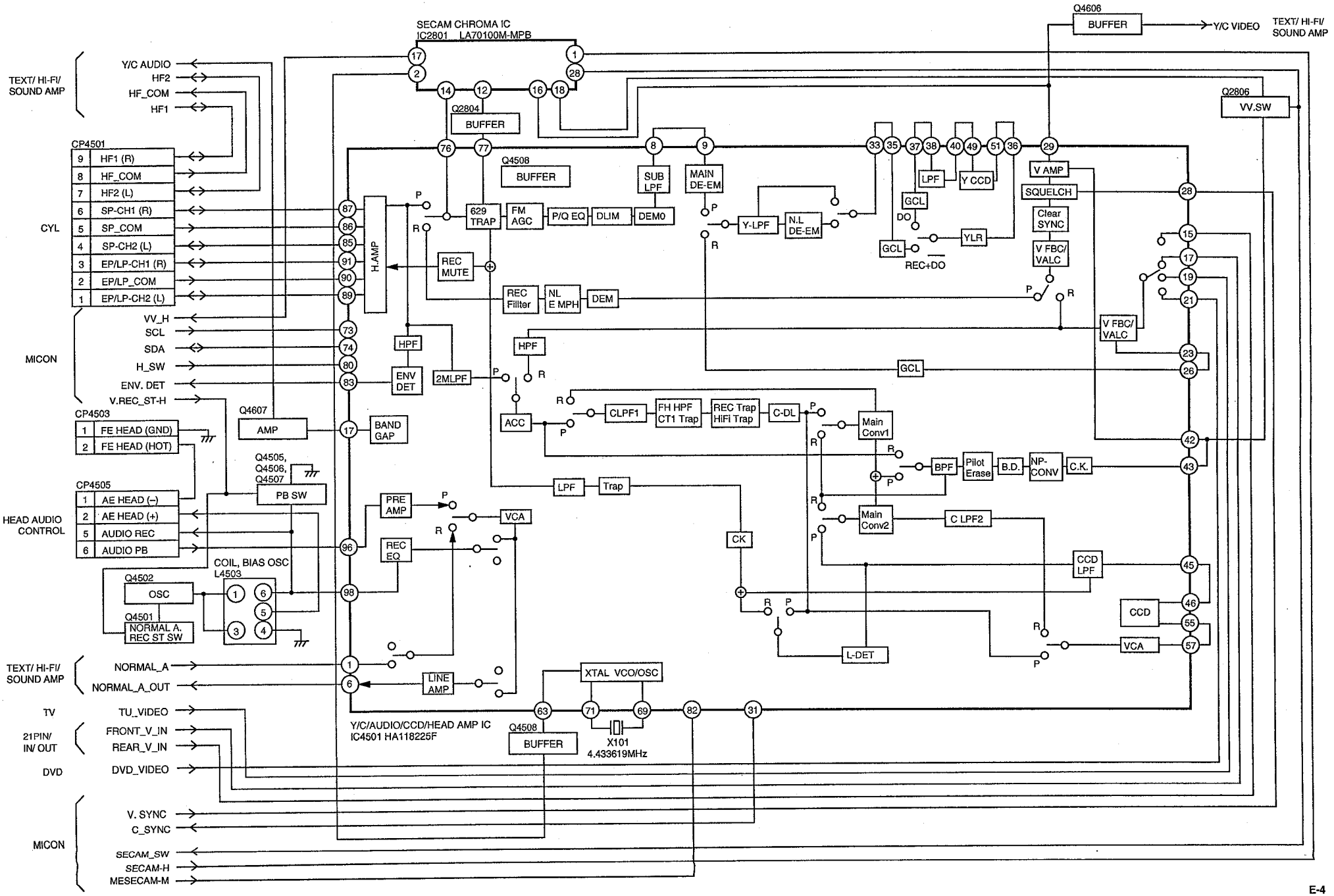
Best. Nr. SM1415-2

Design and specifications are subject to change without notice.

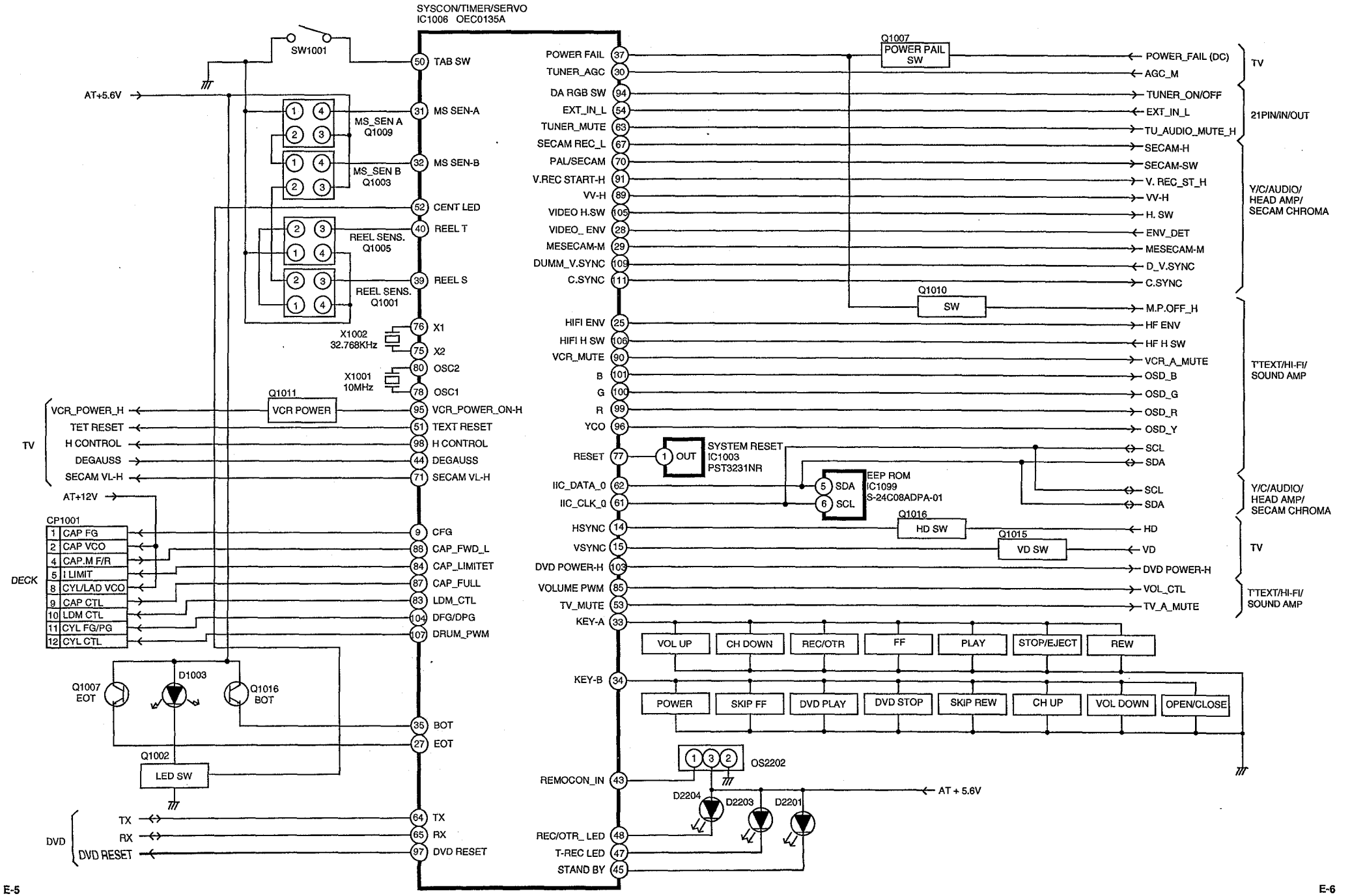
DVD ST SOLUTION BLOCK DIAGRAM



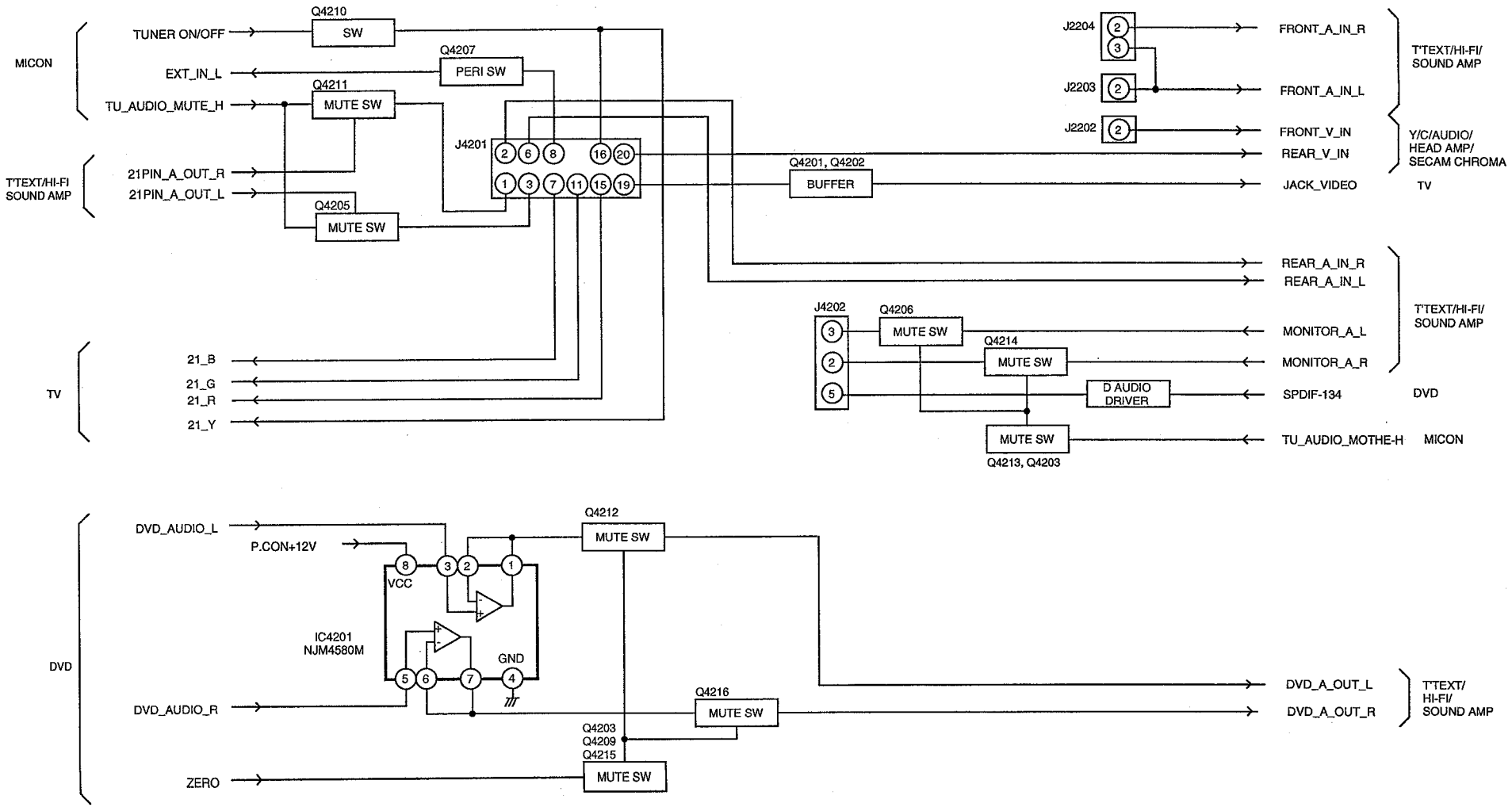
Y/C/AUDIO/HEAD AMP/SECAM CHROMA BLOCK DIAGRAM



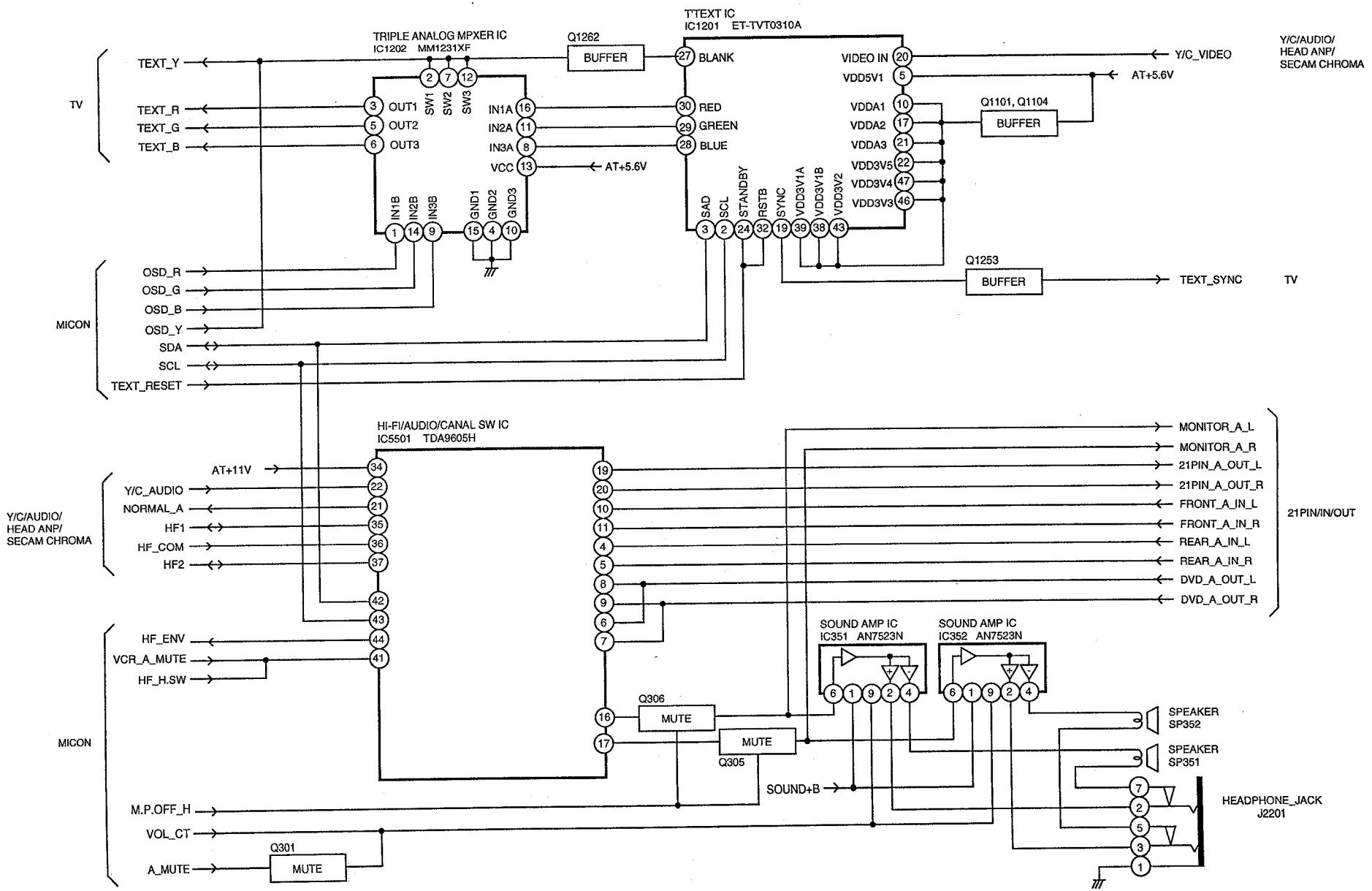
MICON BLOCK DIAGRAM



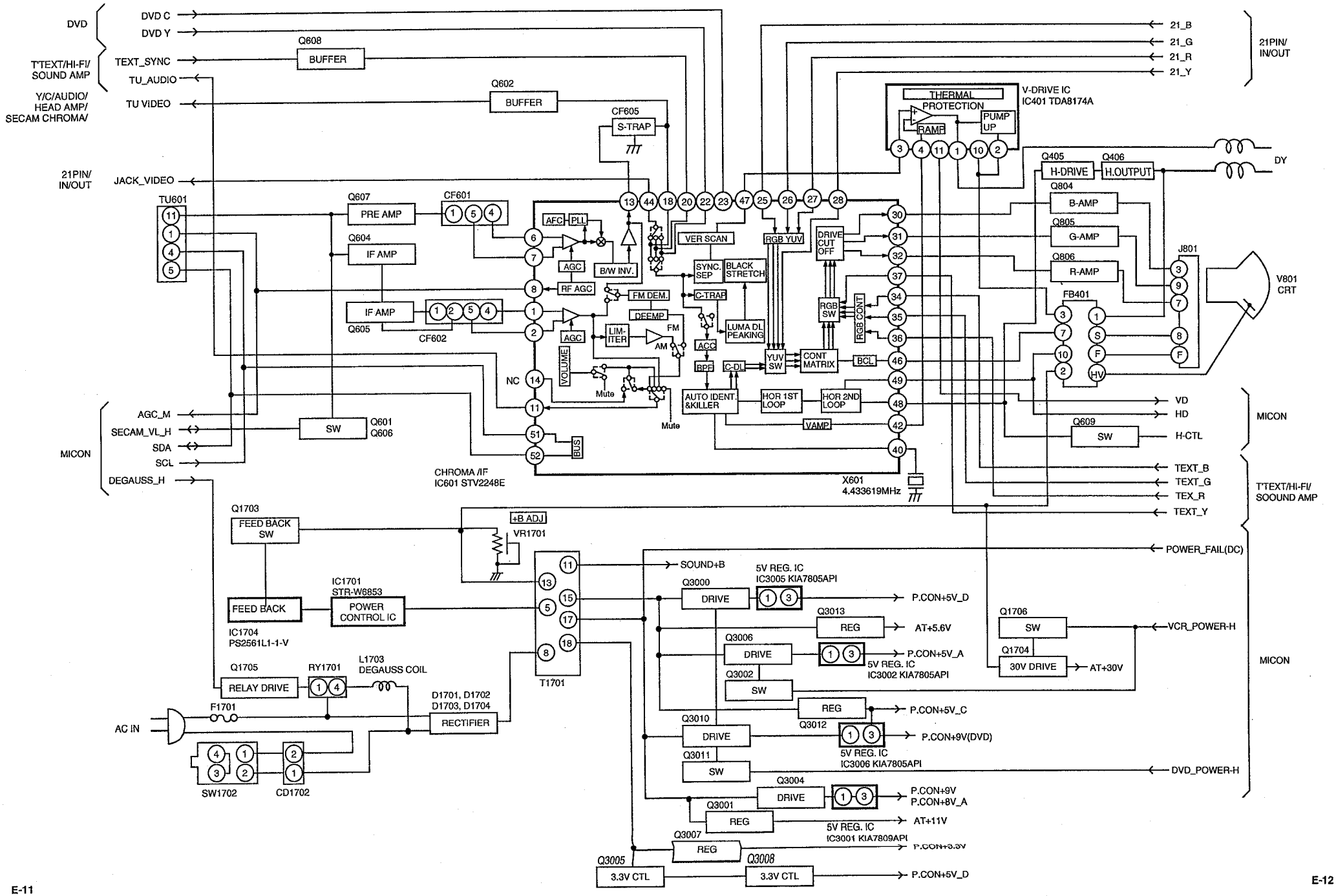
21PIN/IN/OUT BLOCK DIAGRAM



T'TEXT/Hi-Fi/SOUND AMP BLOCK DIAGRAM

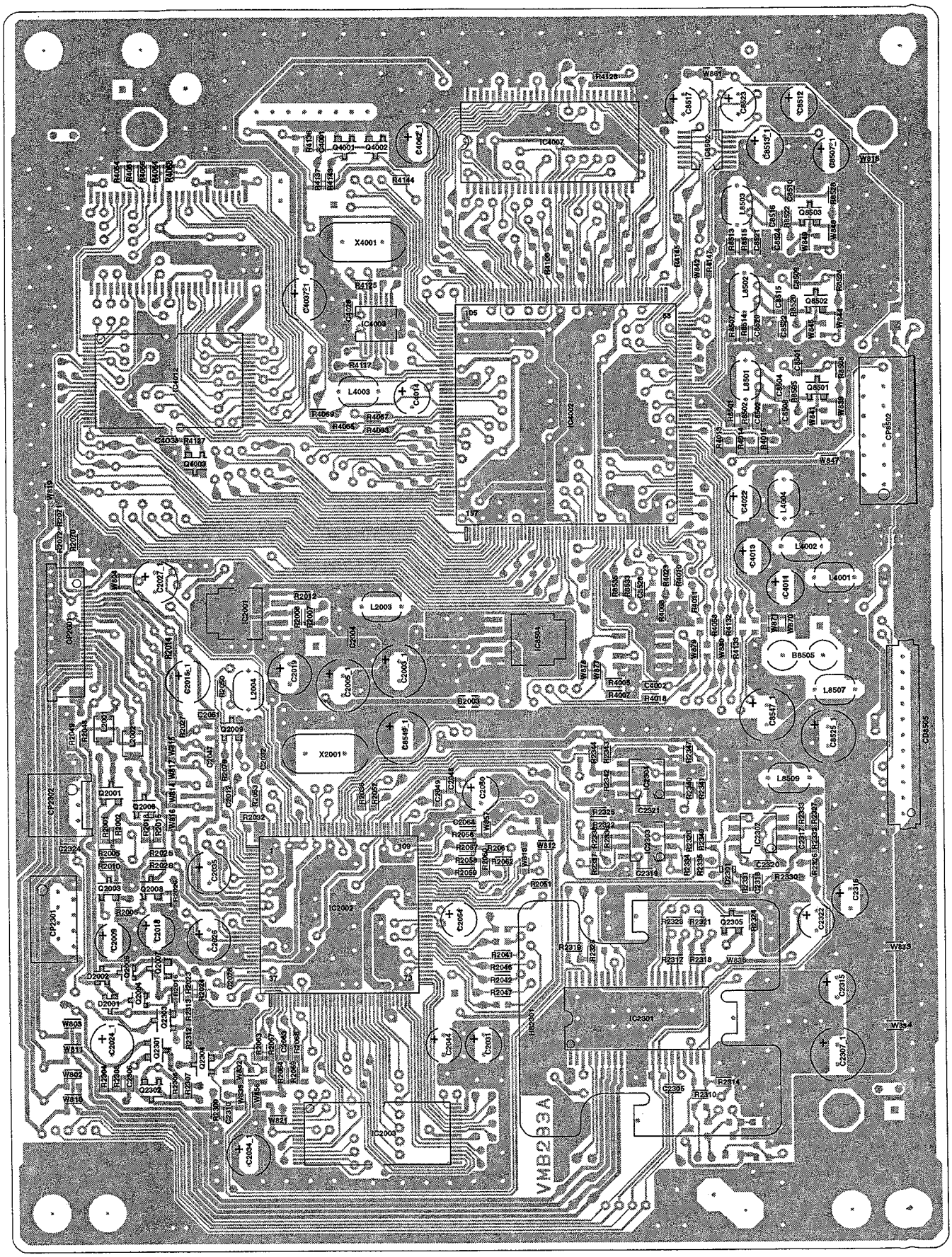


TV BLOCK DIAGRAM

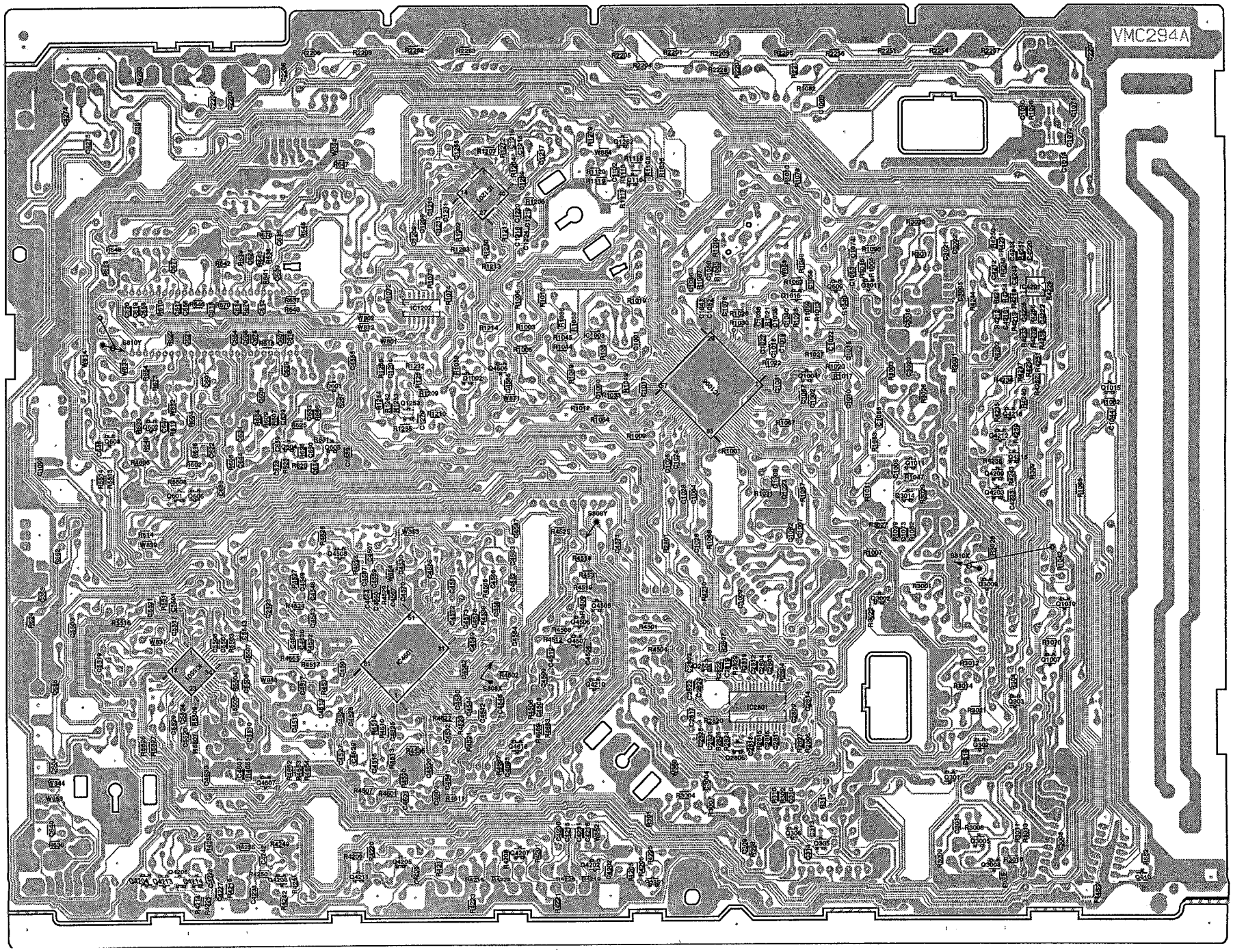


PRINTED CIRCUIT BOARDS

DVD (TOP SIDE)

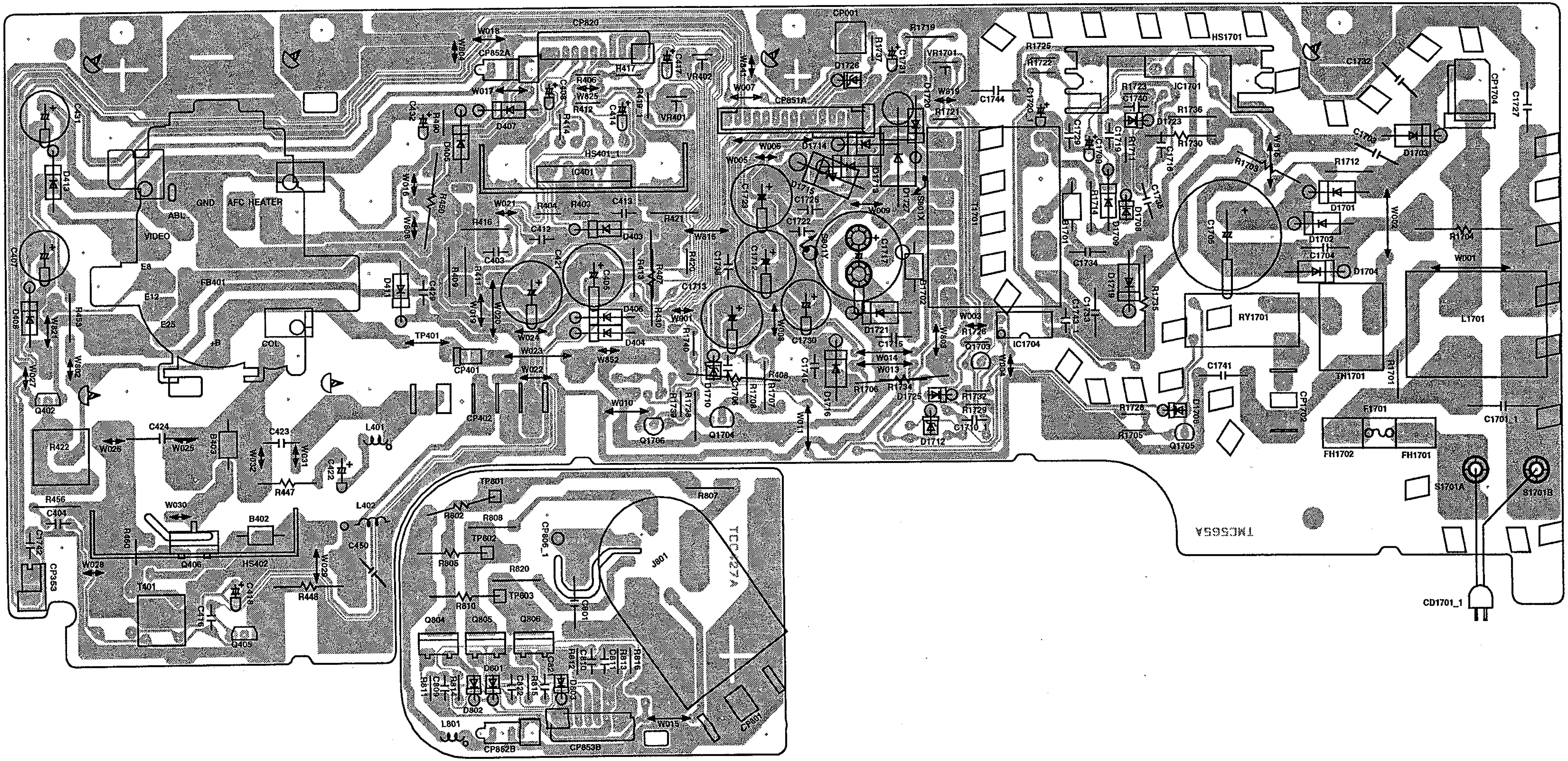


PRINTED CIRCUIT BOARDS
VCR (CHIP MOUNTED PARTS)
SOLDER SIDE



PRINTED CIRCUIT BOARDS

MAIN/CRT
SOLDER SIDE



RF_AMP/DSP SCHEMATIC DIAGRAM (DVD PCB)

CD2001 2H001901
FFC(230mm)
FROM/TO LOADER

CP2001 24FLZ-SM1-TB

24	T-	→ NC	
23	T+	W803 / W811	TR+ / TR-
22	F-	W802	FO+
21	F+	W810	FO-
20	MON(DVD)		LMD1
19	NC(SW)	→ NC	
18	VOL(DVD)		VR-DVD
17	GND(DVD)		
16	LD(DVD)		LD-DVD
15	LD(CD)		LD-CD
14	VOL(CD)		VR-CD
13	GND(CD)		
12	MON(COM)		LMD2
11	GND(NC)	→ NC	
10	RF	→ NC	
9	C		C
8	B		B
7	A		A
6	D		D
5	F		F
4	E		E
3	VCC		
2	VREF	W804	REFD
1	GND(PDIC)	→ NC	

R2070 1K, R2071 1K, R2072 390, C2027_1 16V 22 KA

DVD_LD_CTL Q2001 2SA1036K; CD_LD_CTL Q2006 2SA1036K
LD_CTL Q2003 KTC3875S_Y_RTK; LD_CTL Q2008 KTC3875S_Y_RTK
L2001 10uH NL3225; L2002 10uH NL3225
C2009 16V10 KA; C2018 16V10 KA

BUFFER Q2009 2SA1037AK; C2029 0.01 B

D2001 KDS121RTK; D2002 KDS120RTK
CD_CTL Q2005 2SK3018; DVD_CTL Q2004 2SK3018
DPD_TE_CTL Q2007 KTC3875S_Y_RTK
R2016 4.7K; R2024 10K; R2023 3.3K; R2038 10K

IC2001 PQ070XZ01ZP
REG+1.8V (V_IN, V_C, V_OUT, V_ADJ, GND)
C2003_1 6.3V100 KA; L2003 2.0uH 0305; C2004 0.1 F; C2005_1 6.3V 100 KA; C2007 0.1 F
R2007 510 +-1%; R2008 10 +-1%; R2012 1K +-1%

B2002 FCM2012H-102T04; B2004 FCM2012H-102T04; B2003 FCM2012H-102T04

P.CON+A5V
P.CON+3.3VA
P.CON+3.3V
GND
D_GND

FROM/TO REGULATOR2

RF_AMP/DSP
IC2002
L6315ATXXTY

(1) IREF
(2) GNDAI
(3) RFSACD
(4) RFIN

RFOUT, VCCA18, TST_ADC, TST_SLICE, TST_PM, A, GNDMN, B, VCC33MN, REFD, VCC18MN, D, VCCA18IS, C, VCCA33IS, GNDAIS, VCC33SD, VCC18SD, GNDSD, F, E, VSHIELDIS, VDDADC, VSSADC, VCCADC, GNDADC, VSHIELDADC, NC, BOOT MODE, VSS, VDD3, PC0

(37) PC1
(38) PC2
(39) PC3

PC4, PC5, PC6, PC7, VSS, VDD18, VSS_SPL, RAM_DQM, RAM_WEN, RAM_CASN, RAM_RASN, RAM_A13, RAM_A12, RAM_A11, RAM_A10, RAM_A0, RAM_A1, RAM_A2, RAM_A3, RAM_A4, RAM_A5, RAM_A6, RAM_A7, RAM_A8, RAM_A9, RAM_CLK, VDD_SPL, VDD3, VSS, RAM_DQ0, RAM_DQ1, RAM_DQ2, RAM_DQ3, +1.8VD

SRAM_DQM, SRAM_ADD10, SRAM_ADD11, SRAM_ADD9, SRAM_ADD8, SRAM_ADD13, SRAM_WEN, SRAM_ADD17, SRAM_ADD15, SRAM_ADD14, SRAM_ADD12, SRAM_ADD7, SRAM_ADD6, SRAM_ADD5, SRAM_ADD4, SRAM_DATA7, SRAM_DATA6, SRAM_DATA5, SRAM_DATA4, SRAM_DATA3, SRAM_DATA2, SRAM_DATA1, SRAM_DATA0, SRAM_ADD0, SRAM_ADD1, SRAM_ADD2, SRAM_ADD3

1M SRAM IC2003 C7621289LL-70ZC

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

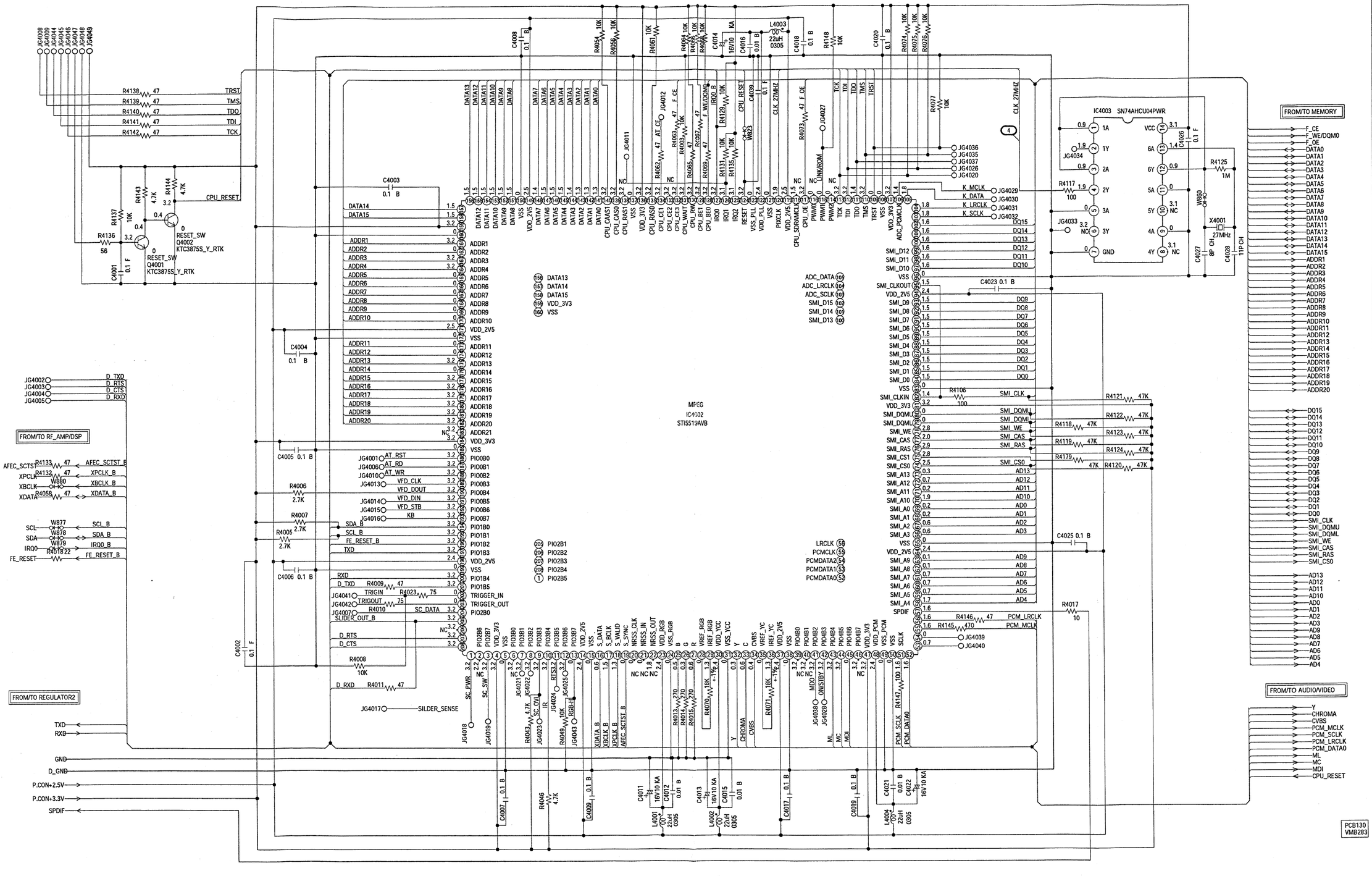
NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

PCB130
VMB283

FROM/TO MPEG
SCL, SDA, IRQ0, FE_RESET, XDATA, XBCLK, XPCLK, AFEC_SCTST

FROM/TO MOTOR DRV
OPN_SW, DMUTE, SPD_FG, CLS_SW, TD, FD, REFDAC, SLD, SPD, TR-, TR+, FO-, FO+, LSW, P.CON+3.3V_1

MPEG SCHEMATIC DIAGRAM (DVD PCB)

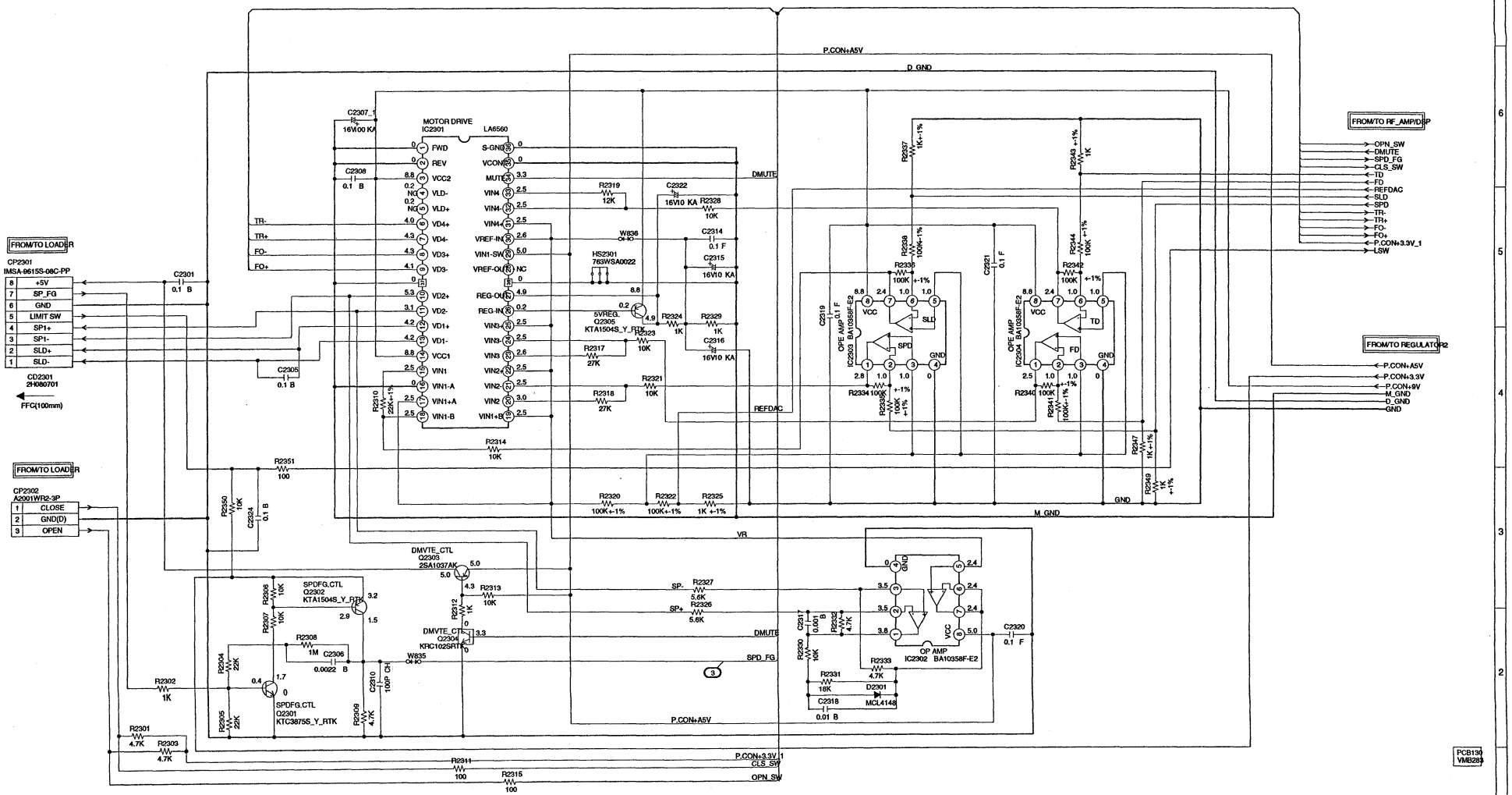


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

MOTOR DRIVE SCHEMATIC DIAGRAM

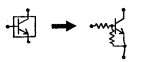
(DVD PCB)



NOTETHIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

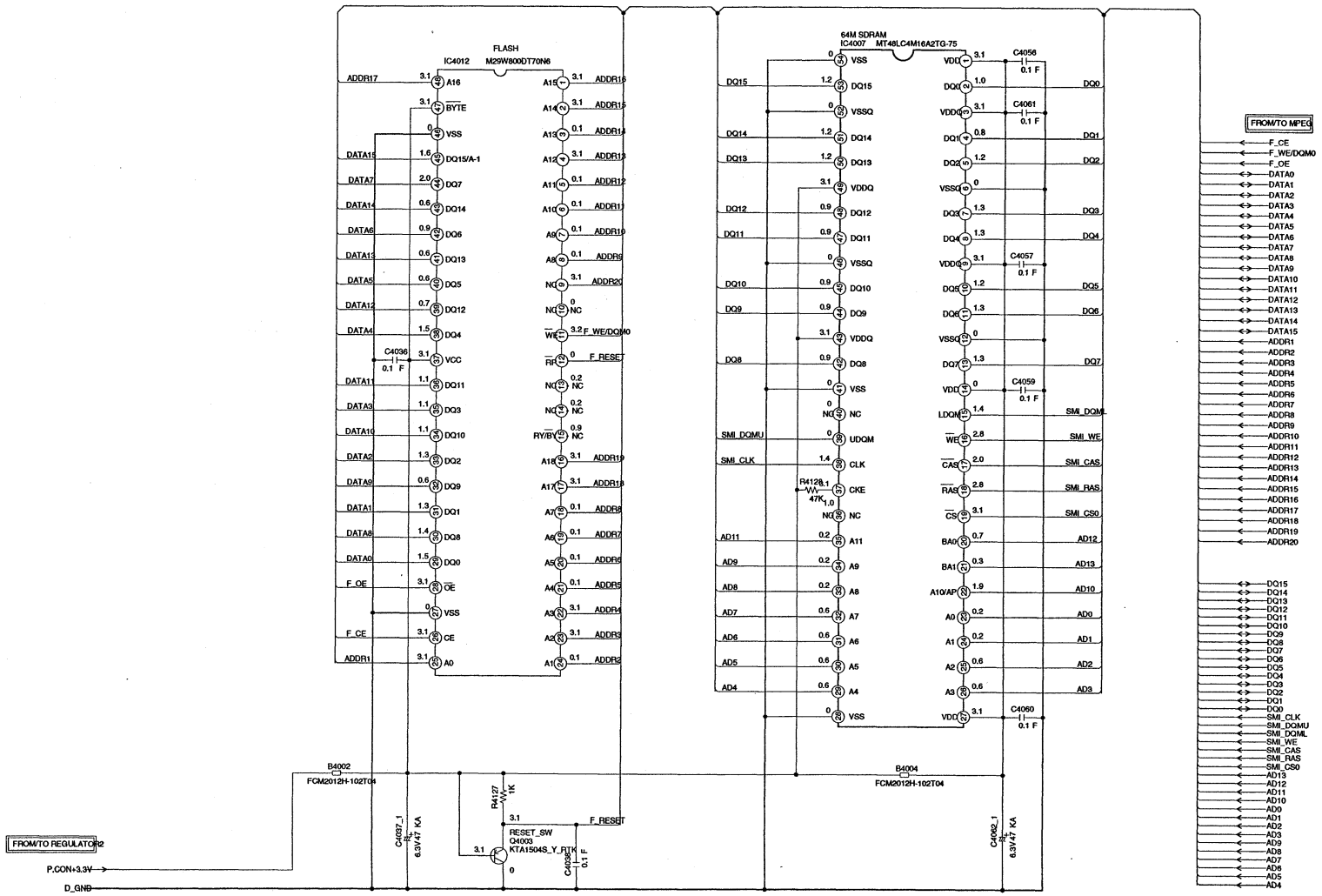
NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

CAUTION: DIGITAL TRANSISTOR



MEMORY SCHEMATIC DIAGRAM

(DVD PCB)



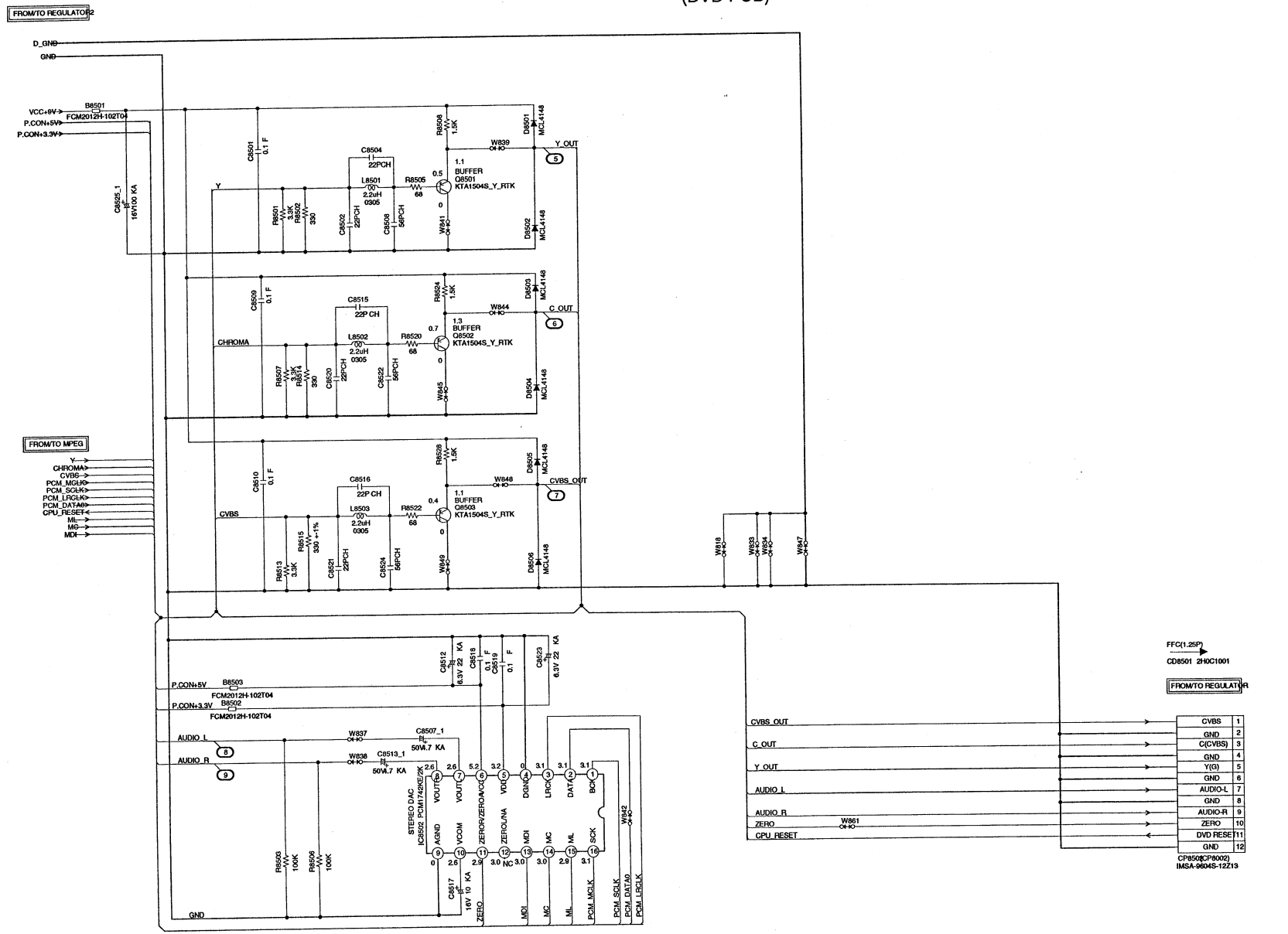
NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

PCB130
VMB283

AUDIO/VIDEO SCHEMATIC DIAGRAM

(DVD PCB)

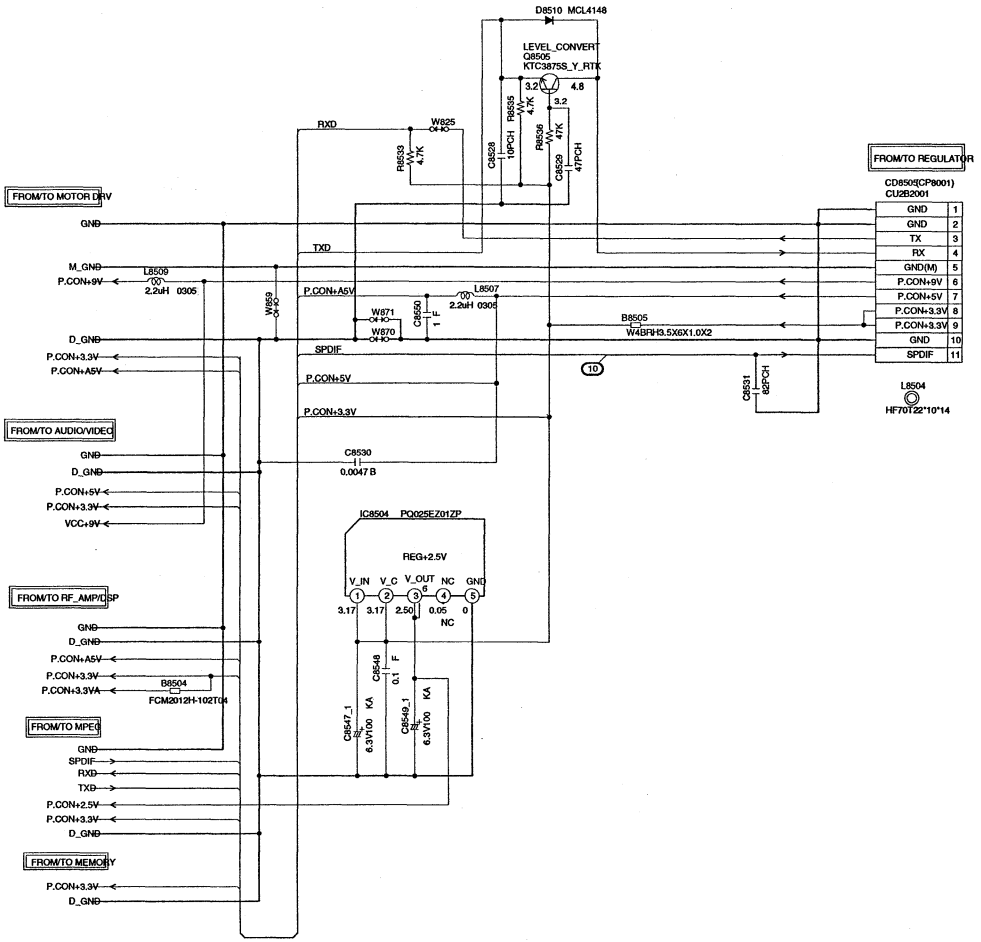


NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

REGULATOR2 SCHEMATIC DIAGRAM

(DVD PCB)



NOTETHIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

Y/C/AUDIO/HEAD AMP SCHEMATIC DIAGRAM
(VCR PCB)

FROM/TO DVD I/O
FRONT_V_IN
FROM/TO REGULATOR
DVD_VIDEO
GND
FROM/TO CYL
CP4501
TOC-C09X-A1
9 HF1 (R)
8 HF_COM
7 HF2 (L)
6 SP_COM
5 SP_CH1 (R)
4 SP_CH2 (L)
3 EP/LP-CH1 (R)
2 EP/LP_COM
1 EP/LP-CH2 (L)
FROM FULL ERASE HEAD
CP4503
B2013H02-2P
2 FE HEAD(GND)
1 FE HEAD(HOT)
FROM/TO HEAD AUDIO CONTROL
CD4505
1.25X6X138XC
CP4505
IMSA-9604S-06Z14
1 AE HEAD(-)
2 AE HEAD(+)
3 CTL-
4 CTL+
5 AUDIO_PB
6 AUDIO_REC
Y/C_AUDIO
P.CON+9V
P.CON+5V_A
AMP Q4607 KTC3875S_Y_RTK
BUFFER Q4508 KTC3875S_Y_RTK
BUFFER Q4618 KTC3875S_Y_RTK
BUFFER Q4606 2SA1037AK
Y/C/AUDIO/CCD /HEAD AMP IC IC4501 HA118225F
15.6KHZ TRAP L4601 2623003
X4501 10001H4410 4.433619MHz
H.SW TP4501
V.ENV TP4502
VD
NORMAL AUDIO REC ST SW Q4501 KTC3203_Y
OSC Q4502 KTC3203_Y
COIL_BIAS OSC L4503 1626008
V.REC ST SW Q4505 KRA103SRTK
PB SW Q4506 KTC3875S_Y_RTK
PB SW Q4507 KTC3875S_Y_RTK
D4502 MTZJ6.8B
D4506 1SS133
FROM/TO SECAM CHROMA/HI-FI
REC_IN
FSC
SECAM_PB_C
LOW_C
HF1
HF2
HF_COM
NORMAL_A
Y/C_AUDIO
LOW_C2
C.SYNC
FROM/TO CHROMA/IF
VD
TU_VIDEO
FROM/TO 21PIN I/O
REAR_V_IN
FROM/TO MICON
VCR_A_MUTE
H.SW
C.SYNC
SCL
SDA
D_V_SYNC
V.REC_ST_H
ENV_DET
CTL+
CTL-
MESECAM_M
FROM/TO T'TEXT/RGB SW
Y/C_VIDEO
SECAM_PB_C
REC_IN
D_V_SYNC
P.CON+5V_A
P.CON+9V
C.SYNC
REAR_V_IN
FRONT_V_IN
TU_VIDEO
DVD_VIDEO
NORMAL_A
V.REC_ST_H

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: DIGITAL TRANSISTOR

PCB010
VMC294

MICON SCHEMATIC DIAGRAM

(VCR PCB)

SYSCON/TIMER/SERVO IC
IC1006
OEC0135A

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

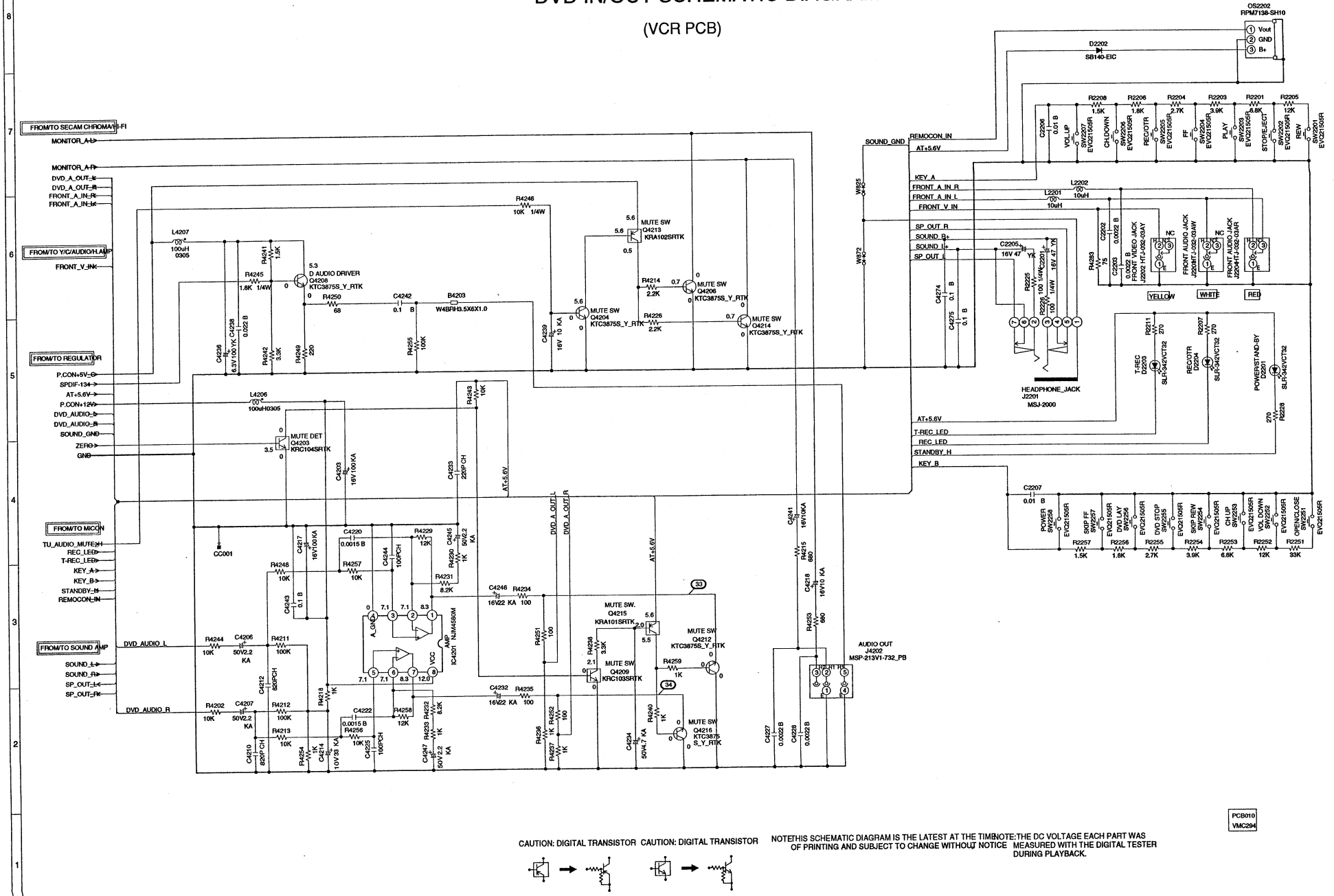
CAUTION: DIGITAL TRANSISTOR

CAUTION: DIGITAL TRANSISTOR

PCB010
VMC294

DVD IN/OUT SCHEMATIC DIAGRAM

(VCR PCB)



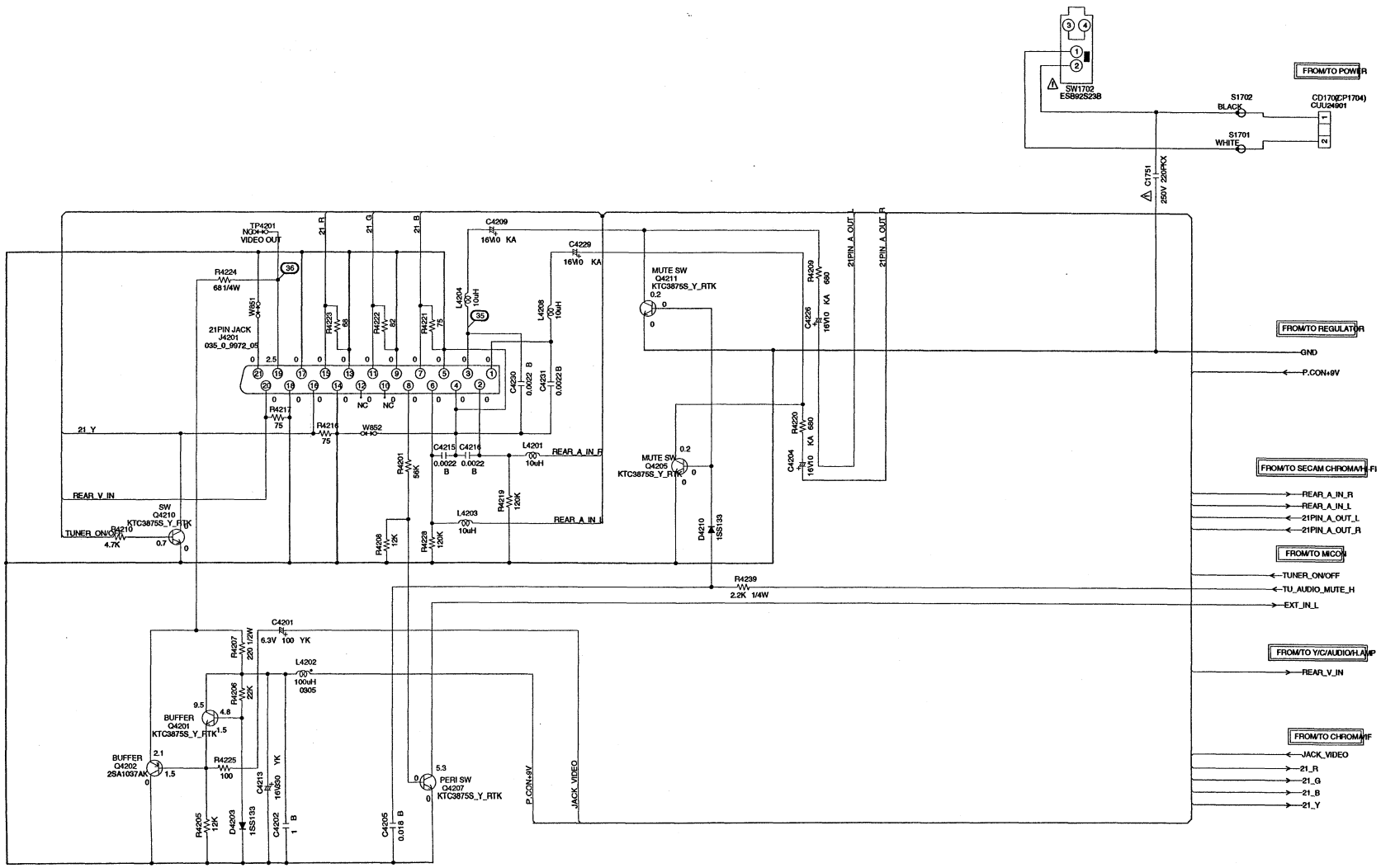
CAUTION: DIGITAL TRANSISTOR CAUTION: DIGITAL TRANSISTOR

NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

21PIN/IN/OUT SCHEMATIC DIAGRAM

(VCR PCB)

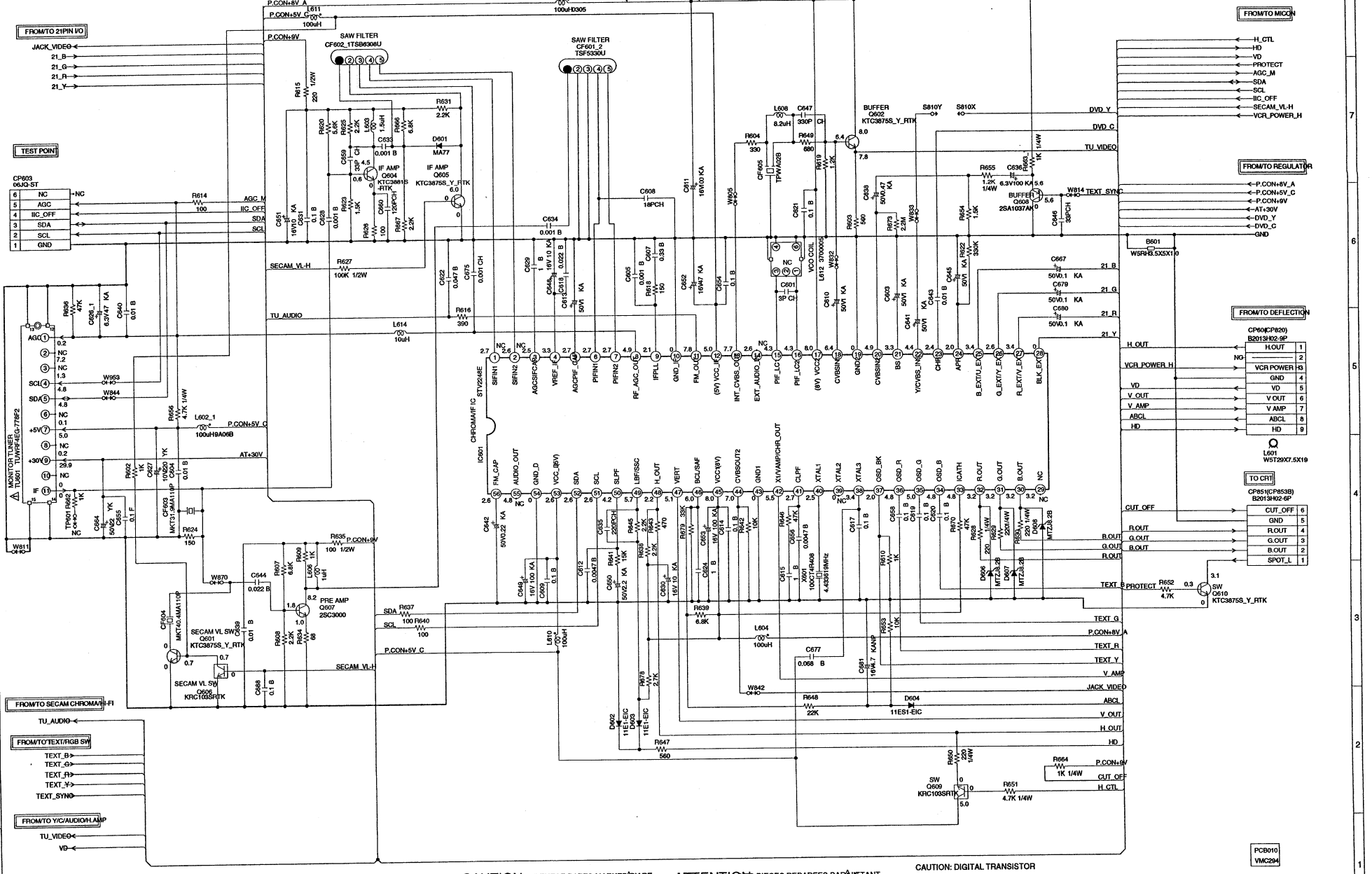


NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

PCB010
VMC294

CHROMA/IF SCHEMATIC DIAGRAM
(VCR PCB)



NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTETHIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

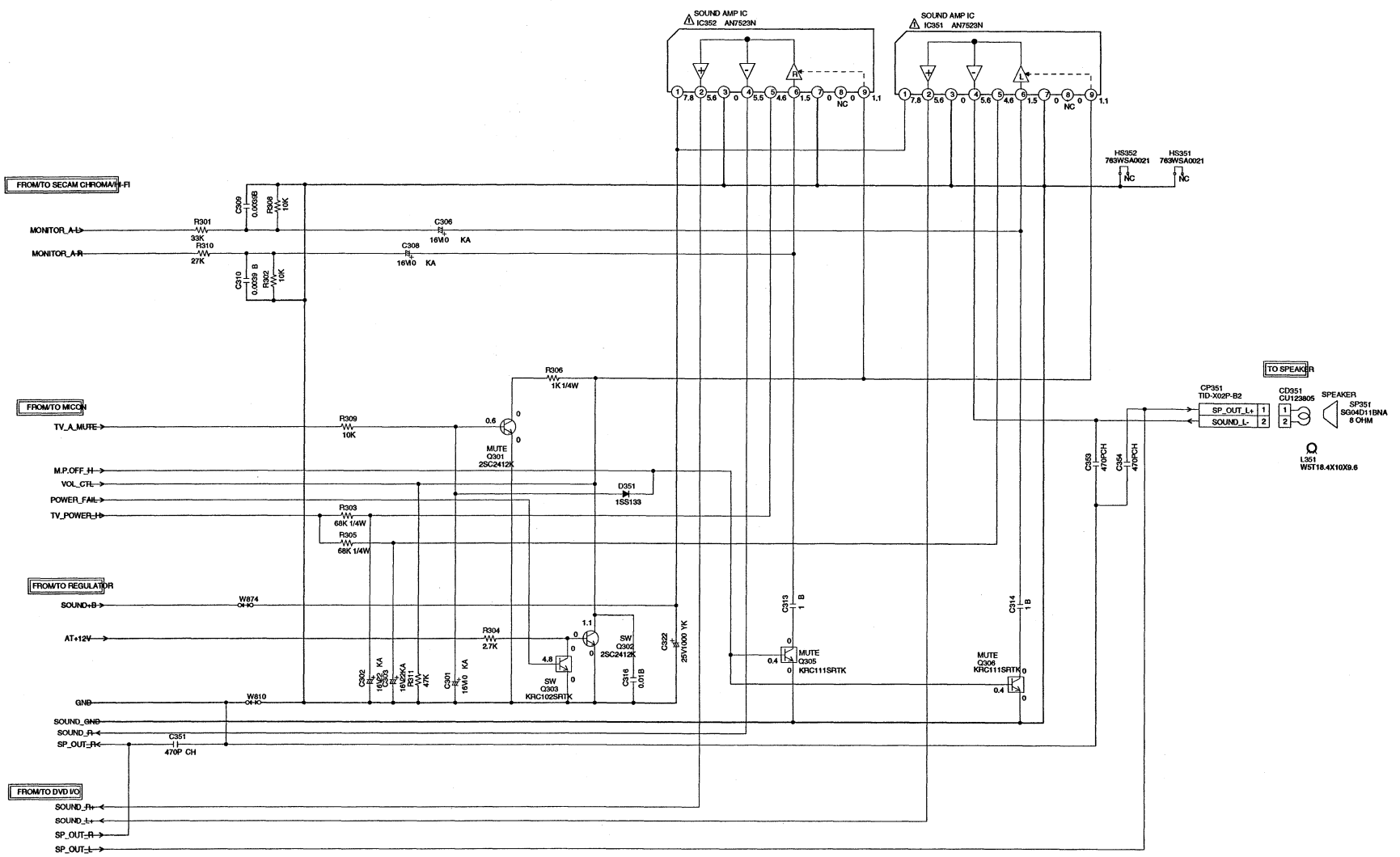
CAUTION: FOR SAFETY, SINCE THESE PARTS MARKED ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY

ATTENTION: POUR LA SECURITE CES PIECES REPAREES PARTICULIERES SONT IMPORTANT DANGEREUSES AN POINT DE VUE SECURITE NUTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES RIECES

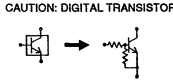
CAUTION: DIGITAL TRANSISTOR

SOUND AMP SCHEMATIC DIAGRAM

(VCR PCB)



CAUTION: DIGITAL TRANSISTOR

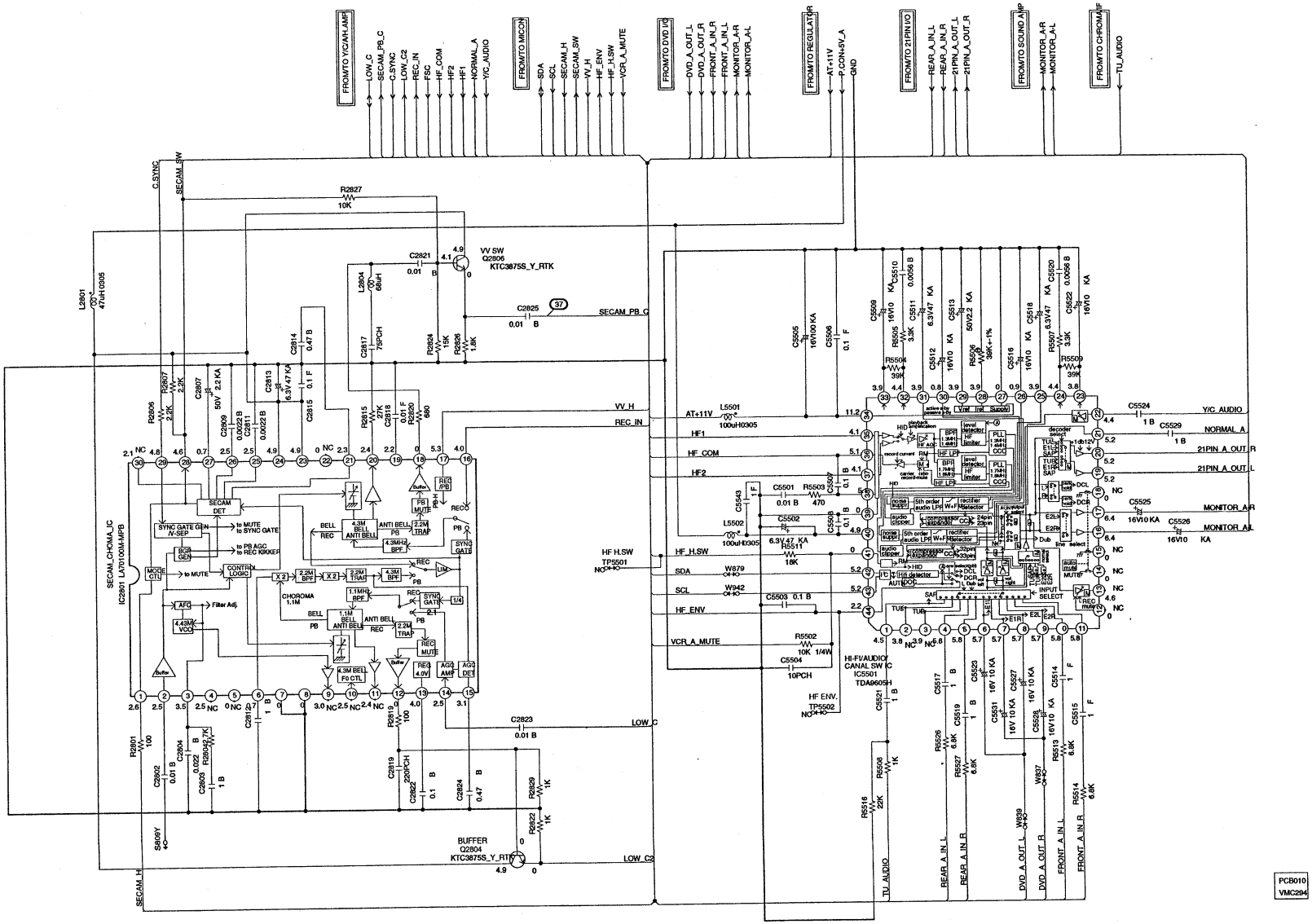


NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

SECAM CHROMA/Hi-Fi SCHEMATIC DIAGRAM

(VCR PCB)

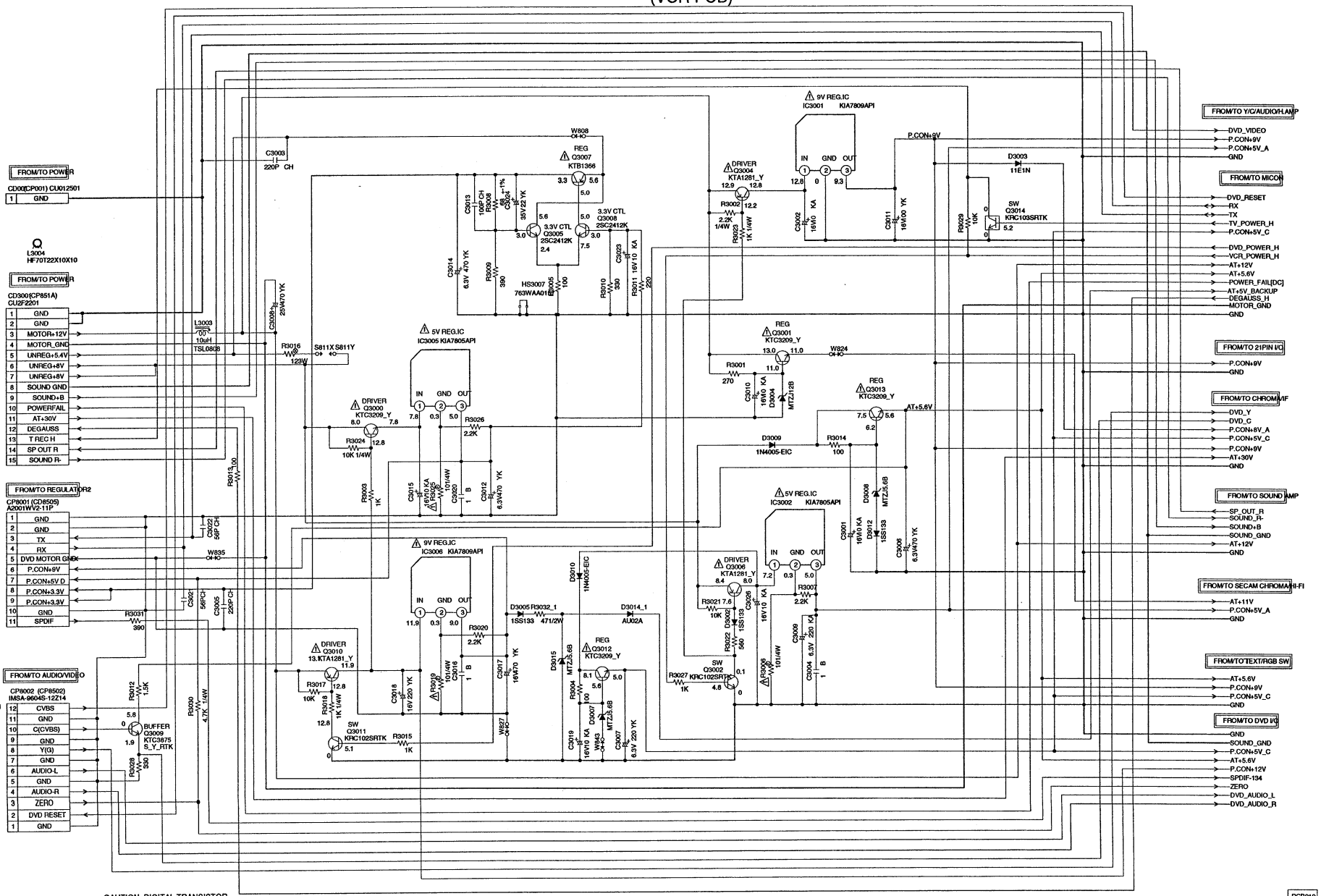


NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTETHIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

REGULATOR SCHEMATIC DIAGRAM

(VCR PCB)



CAUTION: DIGITAL TRANSISTOR

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE AND RATING OF FUSE. THESE PARTS MARKED ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY

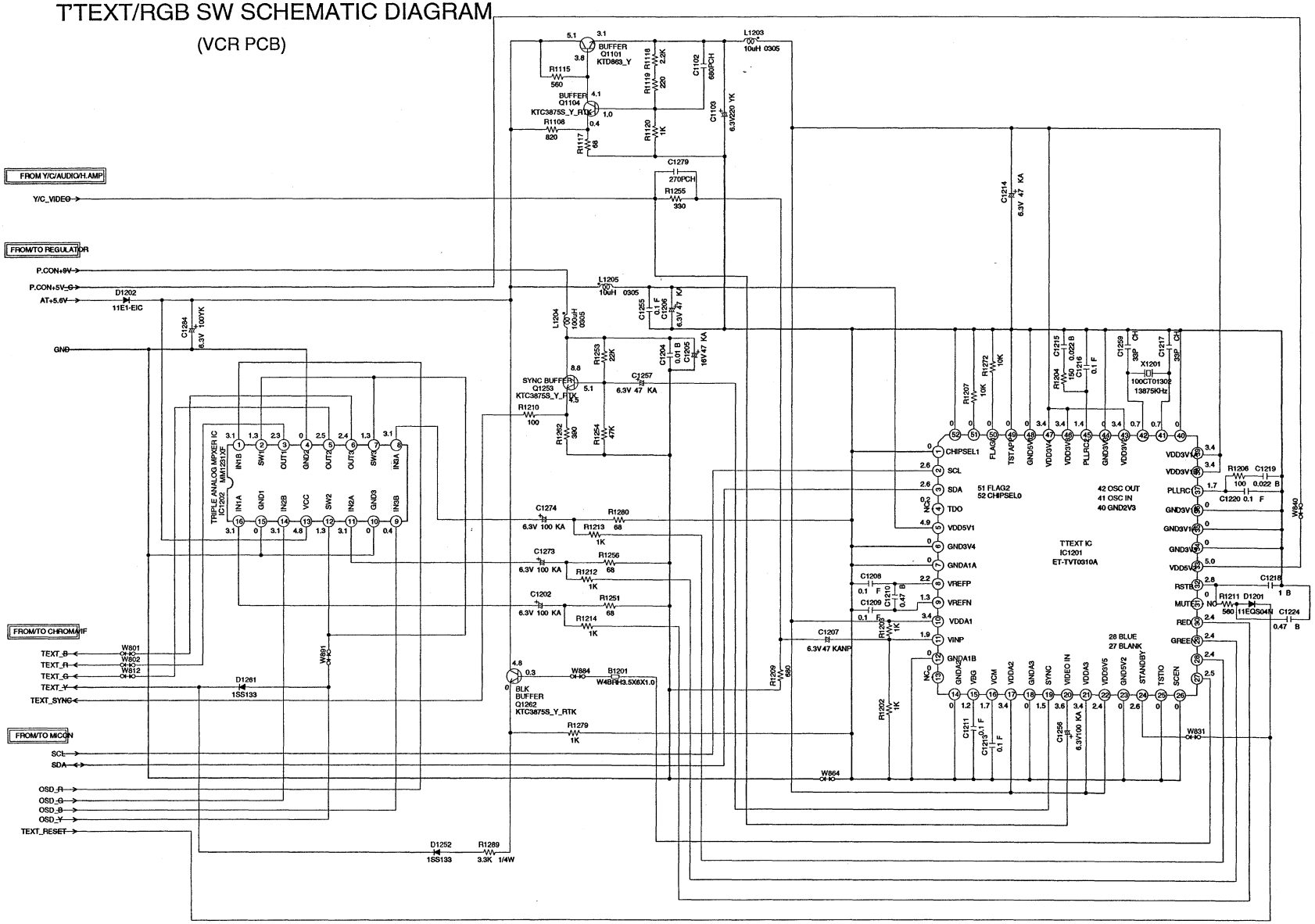
ATTENTION: POUR UNE PROTECTION CONTINUE CONTRE LES DANGERS D'INCENDIE, REMPLACER SEULEMENT PAR UN FUSIBLE DE MEME TYPE ET DE MEME VALEUR. LES PIECES REPAREES PAR ⚠ SONT IMPORTANT POUR LA SECURITE. NE PAS UTILISER DES PIECES QUI NE SONT PAS DECRITES DANS LA NOMENCLATURE DES PIECES

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

TTEXT/RGB SW SCHEMATIC DIAGRAM

(VCR PCB)

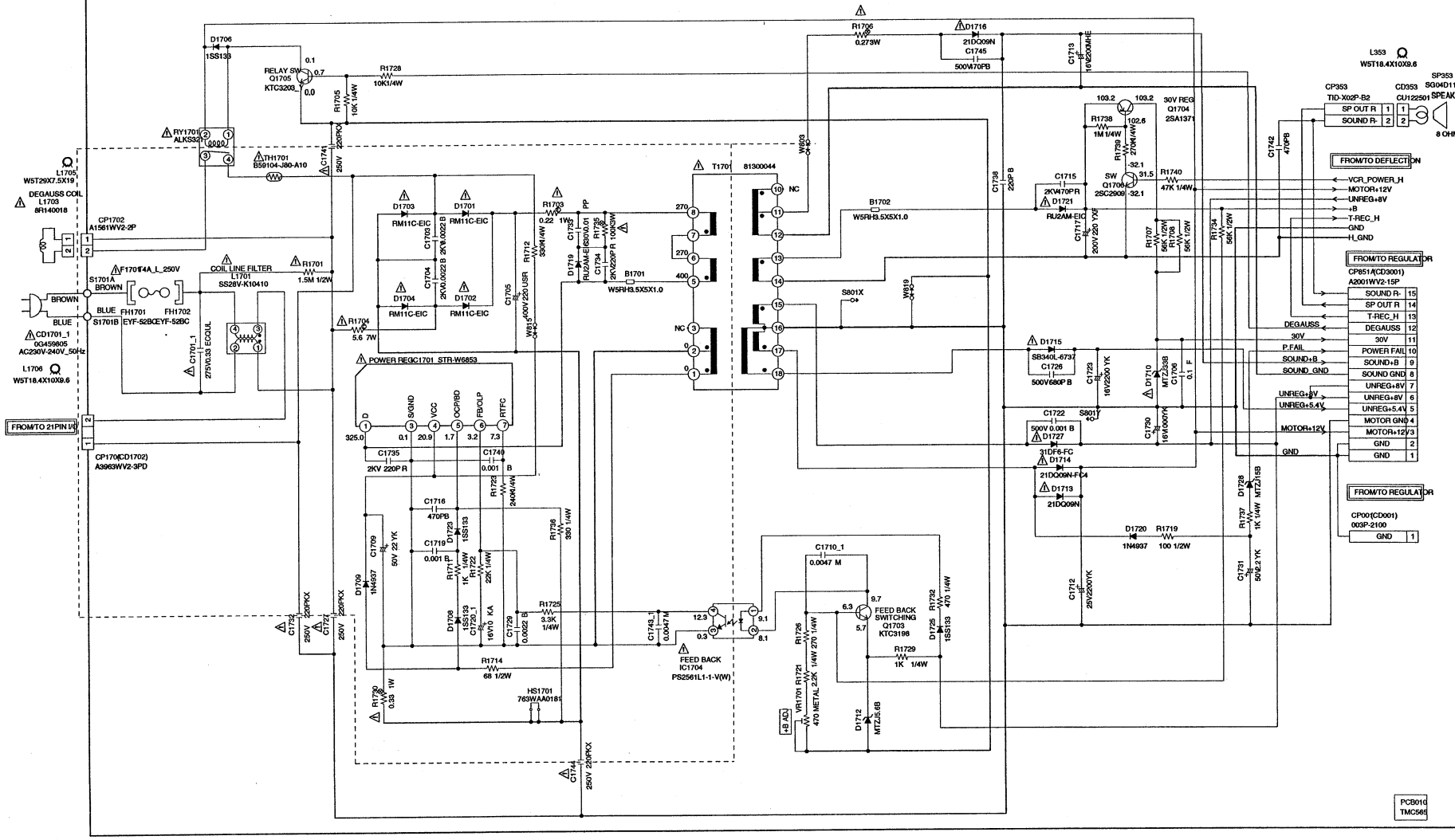


NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

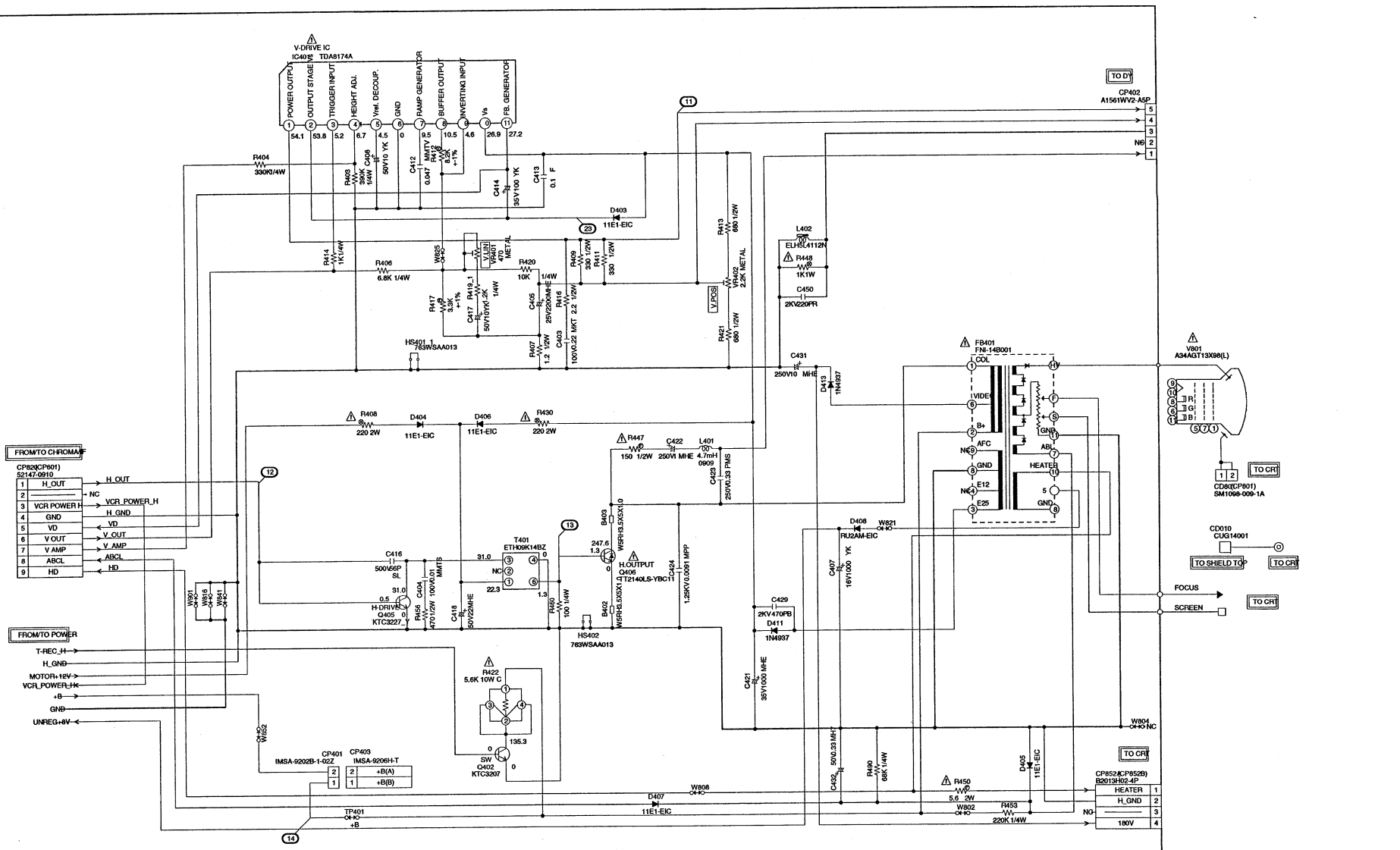
NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

POWER SCHEMATIC DIAGRAM

(MAIN PCB)



DEFLECTION SCHEMATIC DIAGRAM (MAIN PCB)



NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

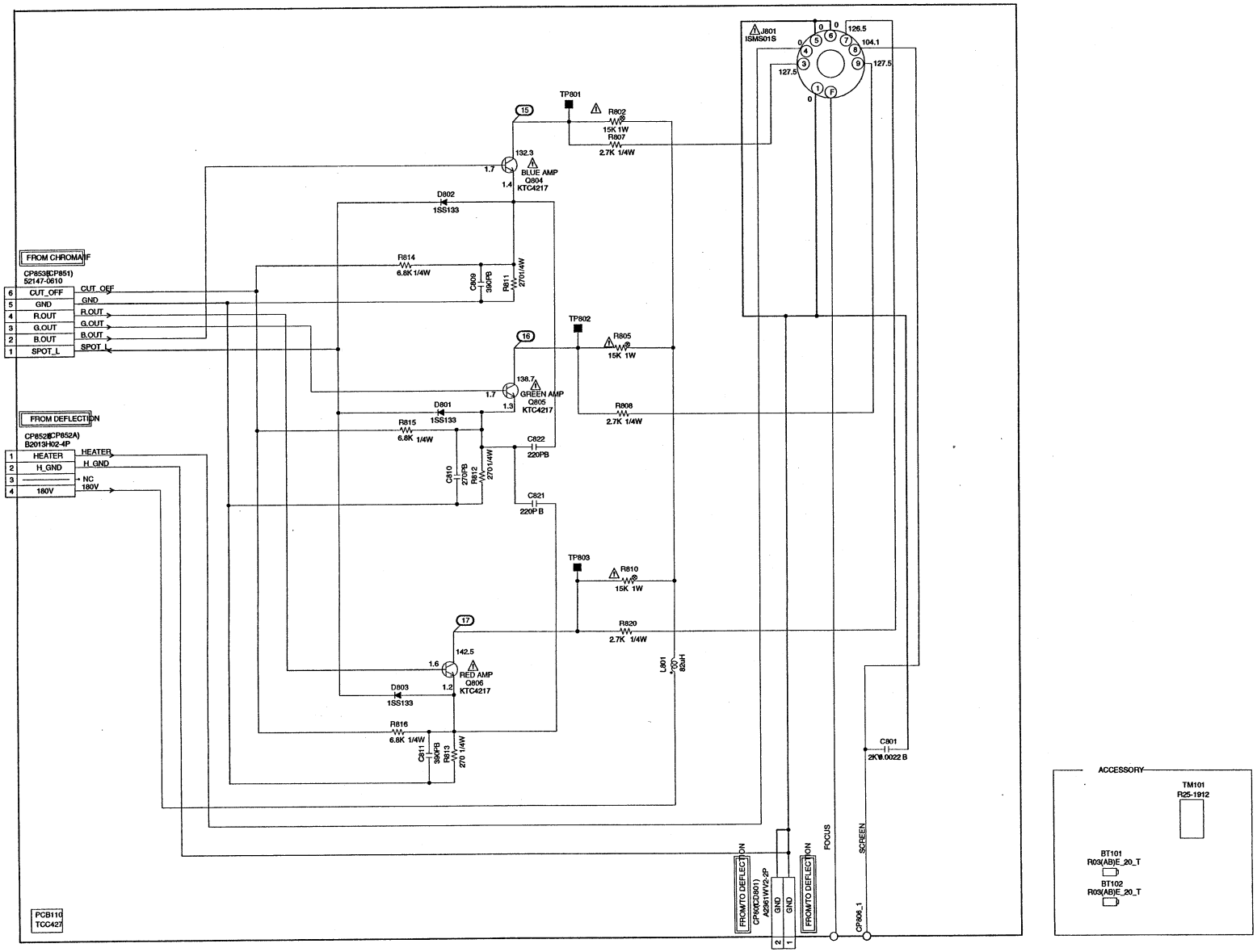
NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE:THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

⚠ CAUTION: SINCE THESE PARTS MARKED ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY

⚠ ATTENTION: LES PIECES REPAREES PARMI CELLES MARQUEES ⚠ SONT IMPORTANTES DANGEREUSES AN POINT DE VUE SECURITE NUTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES RIECES

CRT SCHEMATIC DIAGRAM
(CRT PCB)



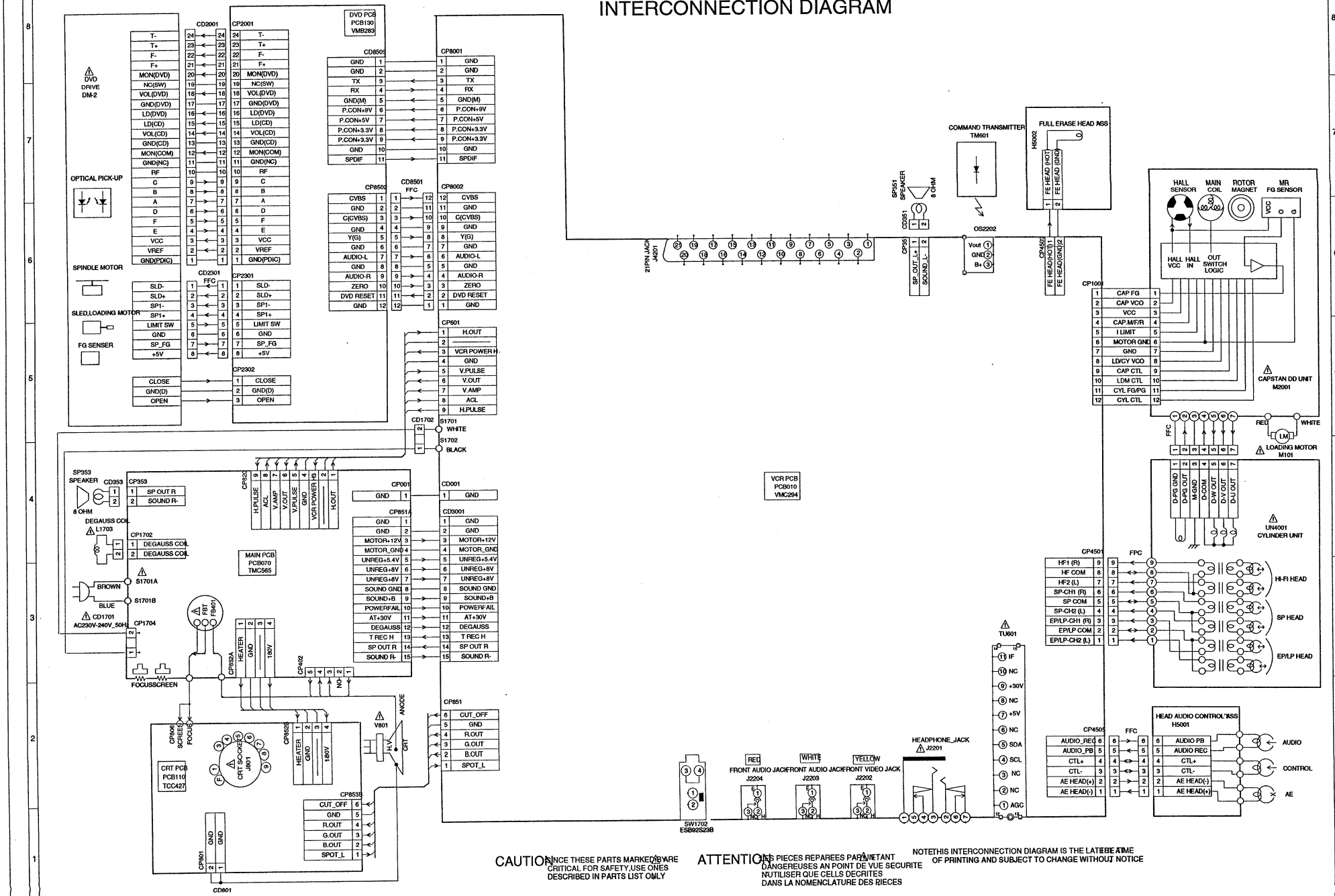
NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTETHIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

CAUTION: ANCE THESE PARTS MARKED ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY

ATTENTION: S PIECES REPAREES PARTICULTANT DANGEREUSES AN POINT DE VUE SECURITE NUTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES

INTERCONNECTION DIAGRAM



CAUTION: FOR SAFETY, SINCE THESE PARTS MARKED ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY

ATTENTION: POUR LA SECURITE CES PIECES REPAREES PARTICULIEREMENT IMPORTANTES DANGEREUSES AN POINT DE VUE SECURITE NUTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES RIECES

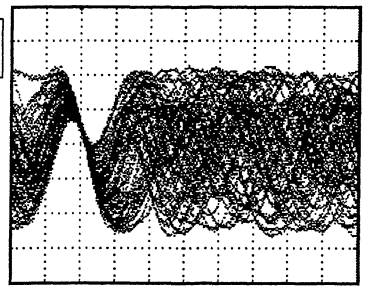
NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

WAVEFORMS

RF_AMP/DSP

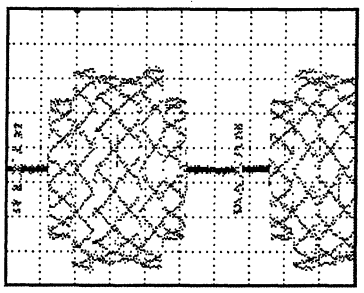
100ns
100mV

①



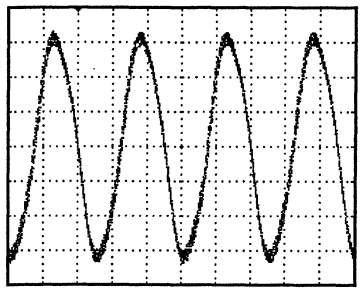
10µs
100mV

⑥



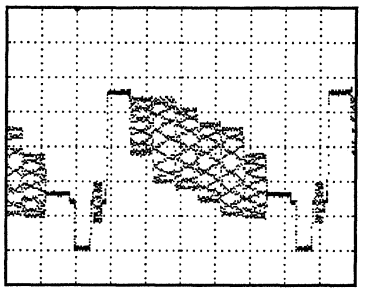
20ns
200mV

②



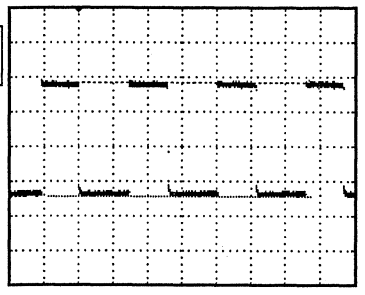
10µs
200mV

⑦



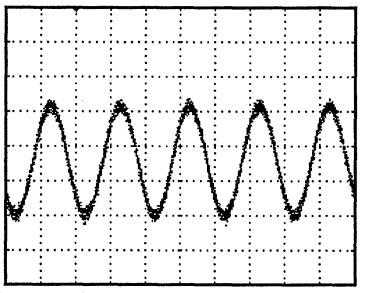
2ms
1.0V

③



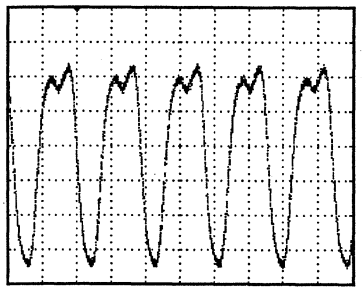
500µs
500mV

⑧



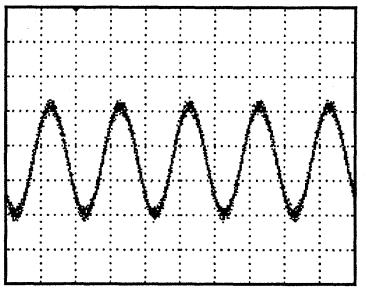
20ns
500mV

④



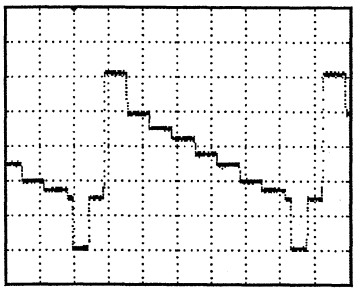
500µs
500mV

⑨



10µs
200mV

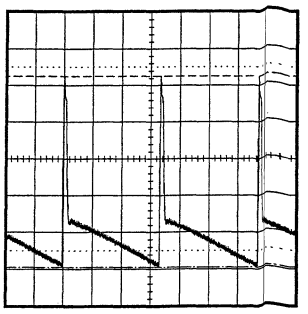
⑤



DEFLECTION

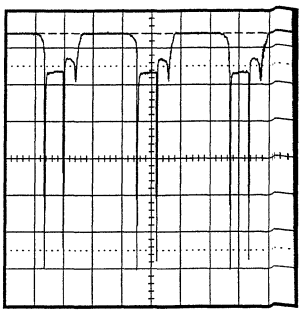
5ms
10.0V

⑪



20µs
2.0V

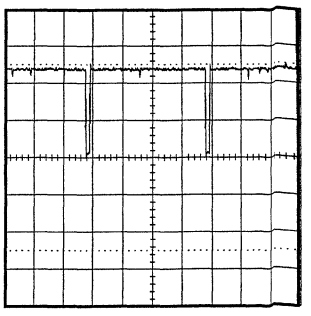
⑫



MOTOTR DRIVE

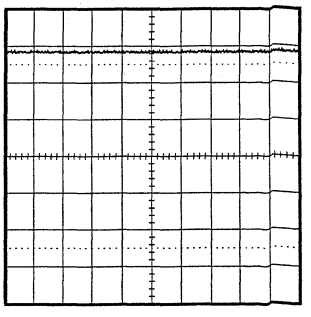
5ms
2.0V

⑬



0.1ms
20.0V

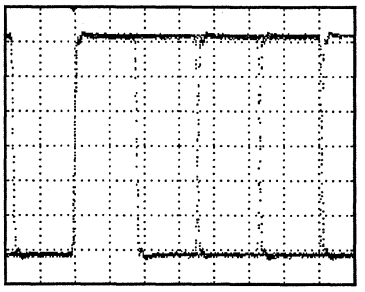
⑭



REGULATOR 2

100ns
500mV

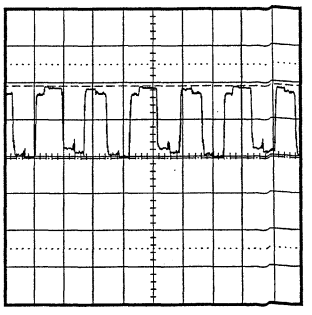
⑩



CRT

20µs
50.0V

⑮

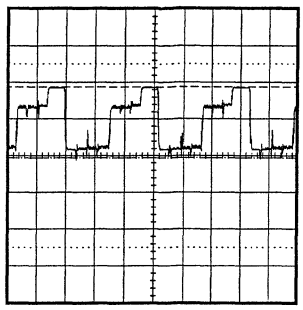


NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

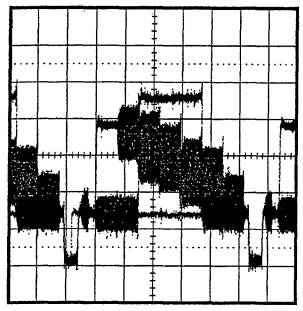
20µs
50.0V

(16)



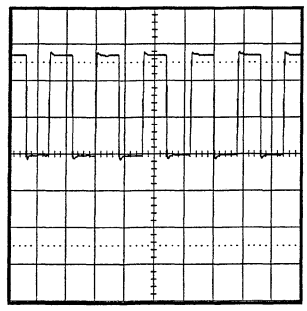
REC
10µs
0.5V

(23)



PB
0.5µs
2.0V

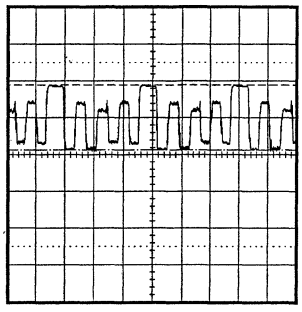
(28)



MICON

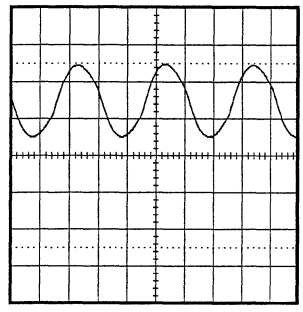
20µs
50.0V

(17)



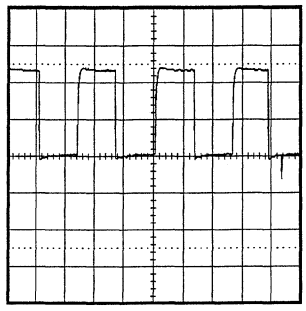
REC
10µs
1.0V

(24)



PB
5ms
2.0V

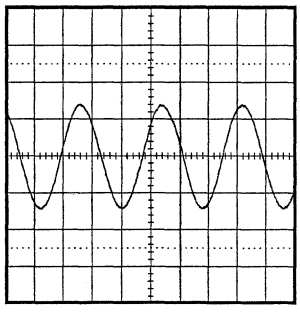
(29)



Y/C/AUDIO/HEAD AMP

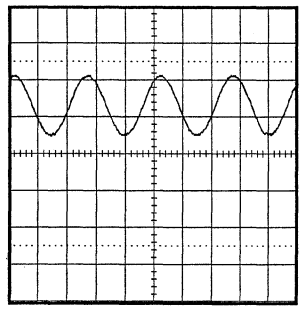
REC
5µs
20.0V

(20)



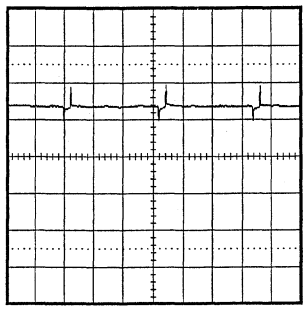
REC
1ms
2.0V

(25)



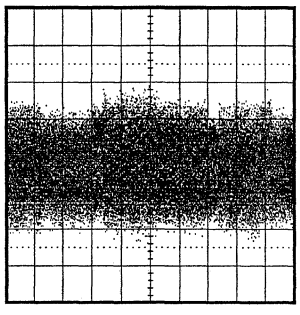
REC
20µs
2.0V

(30)



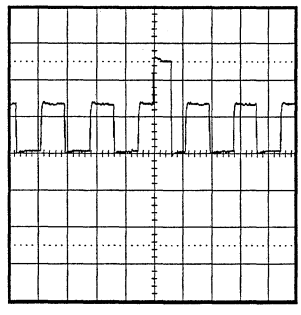
PB
5ms
50mV

(21)



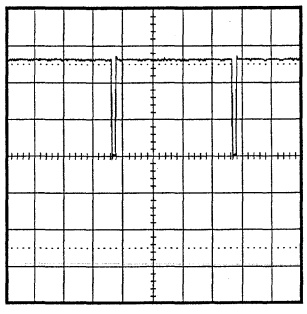
REC
1ms
2.0V

(26)



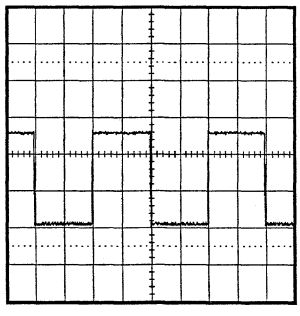
REC
5ms
2.0V

(31)



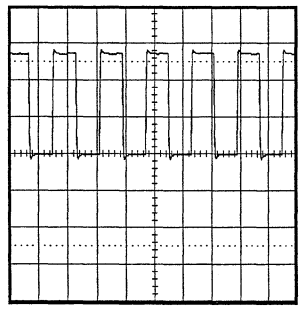
PB
10ms
2.0V

(22)



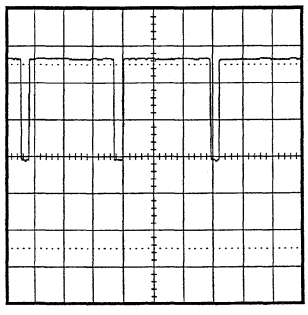
PB
0.5µs
2.0V

(27)



REC
20µs
2.0V

(32)



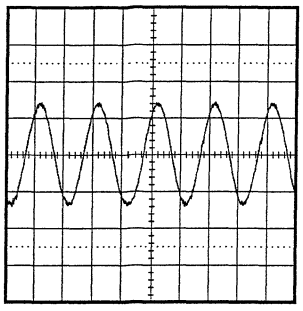
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

DVD IN/OUT

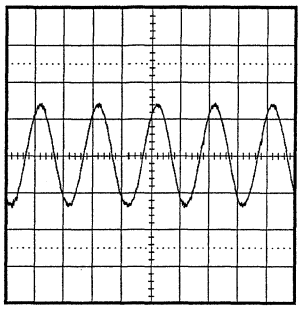
PB
0.5ms
0.5V

(33)



PB
0.5ms
0.5V

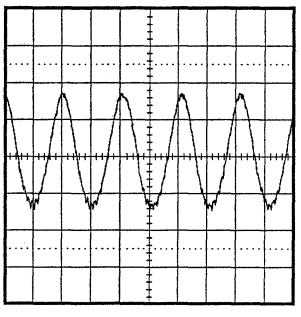
(34)



21PIN/IN/OUT

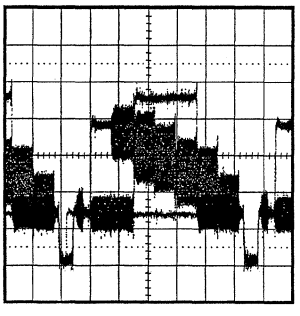
REC
0.5ms
0.5V

(35)



REC
10µs
0.5V

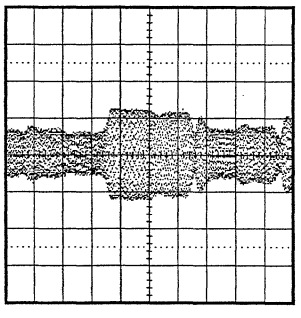
(36)



SECAM CHROMA/Hi-Fi

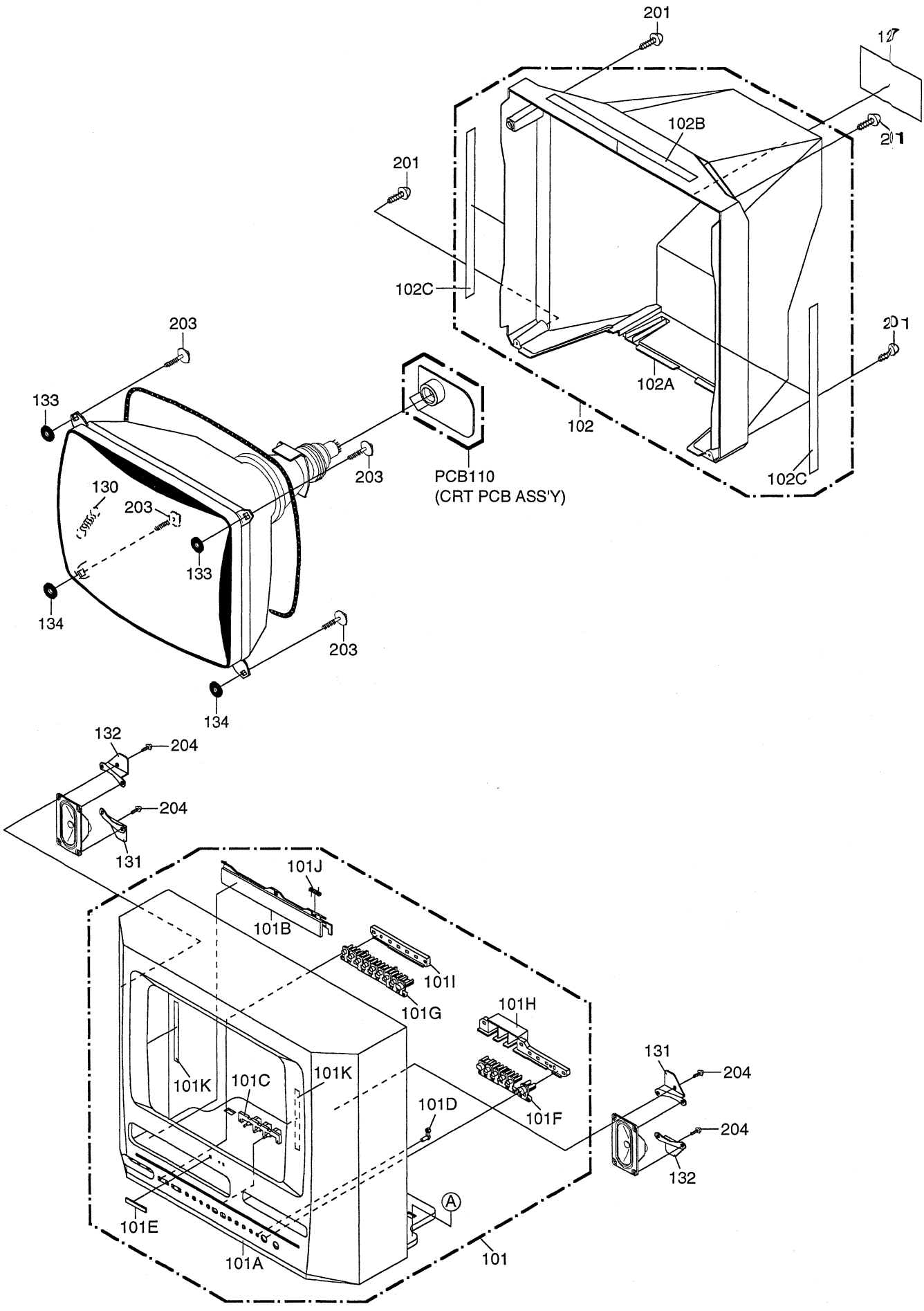
PB
5µs
200mV

(37)

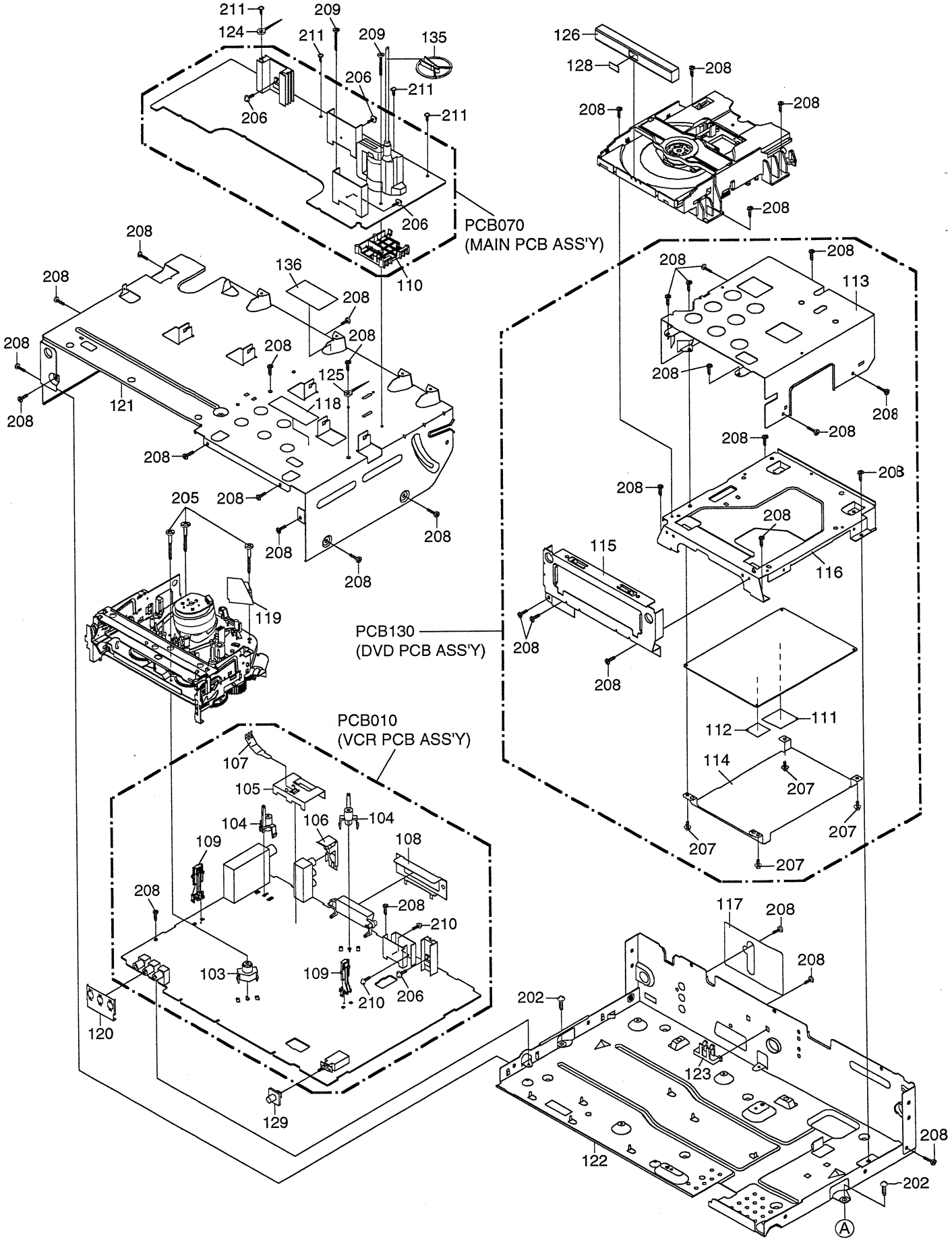


NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

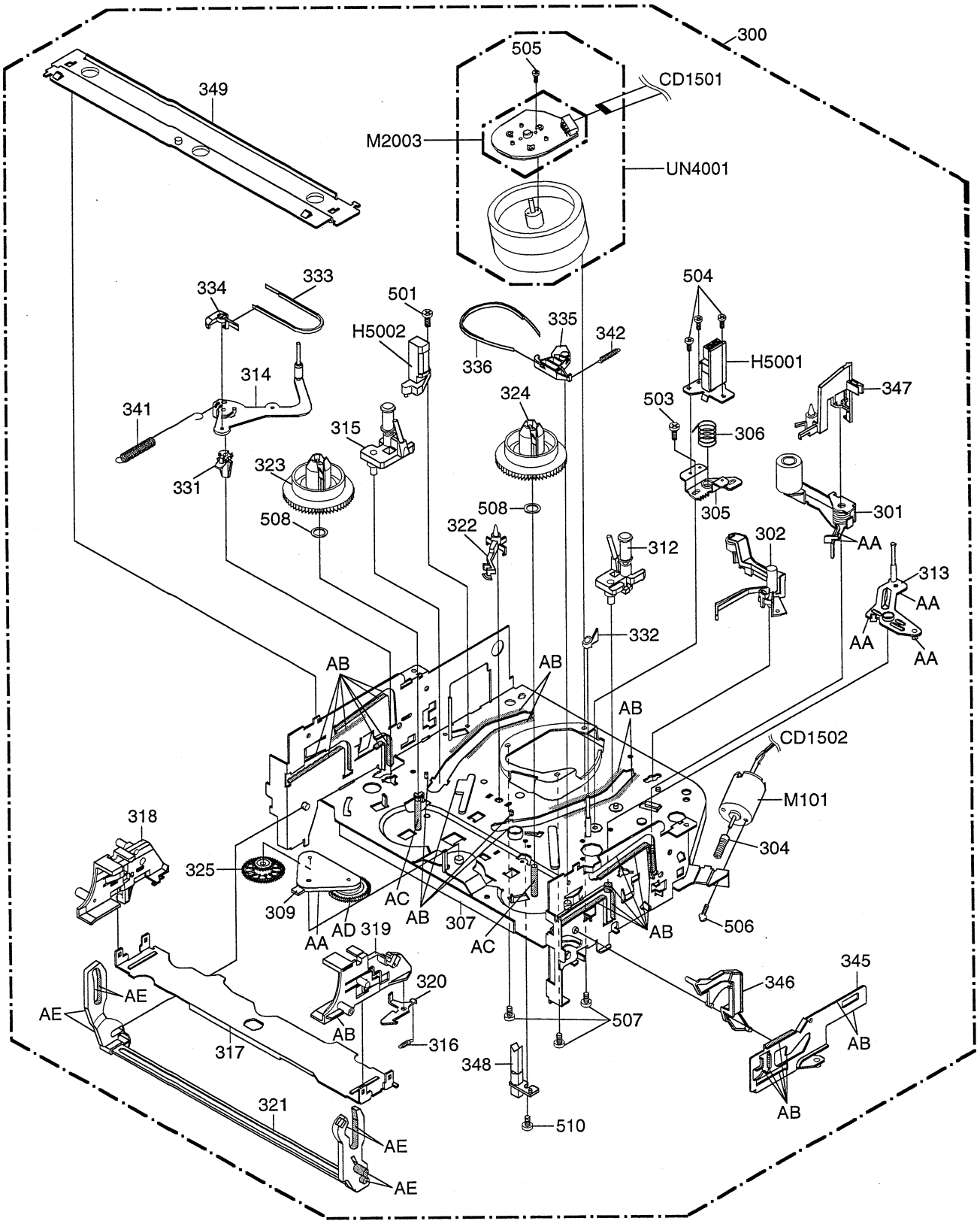
MECHANICAL EXPLODED VIEW



MECHANICAL EXPLODED VIEW



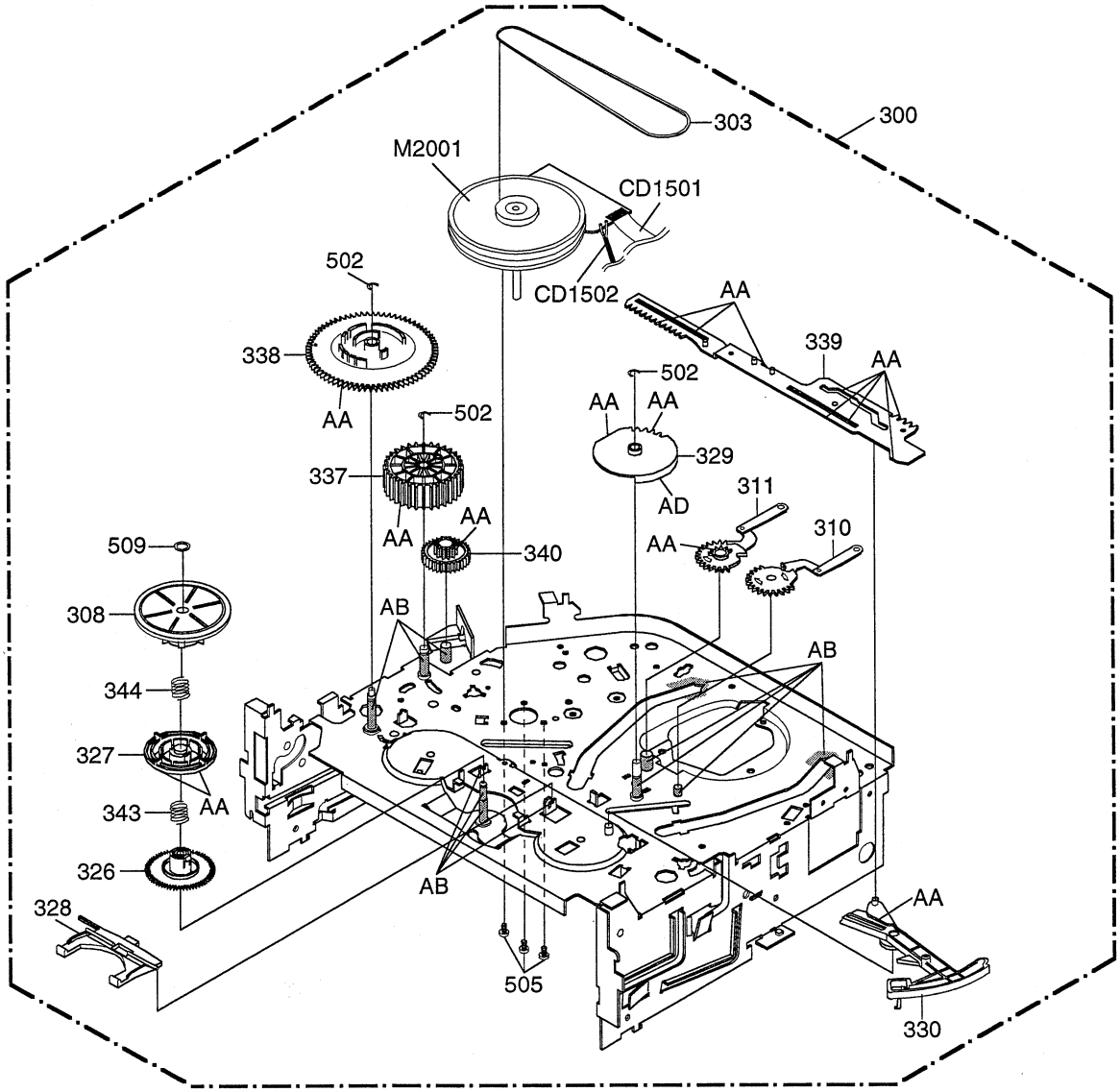
CHASSIS EXPLODED VIEW (TOP VIEW)



CLASS	PART NO.	MARK
GREASE	G-555G	AA
	MG-33	AB
	FG-84M	AC
	FL-721	AD
	G-313Y	AE

NOTE: Applying positions AA, AB, AC, AD and AE for the grease are displayed for this section. Check if the correct grease is applied for each position.

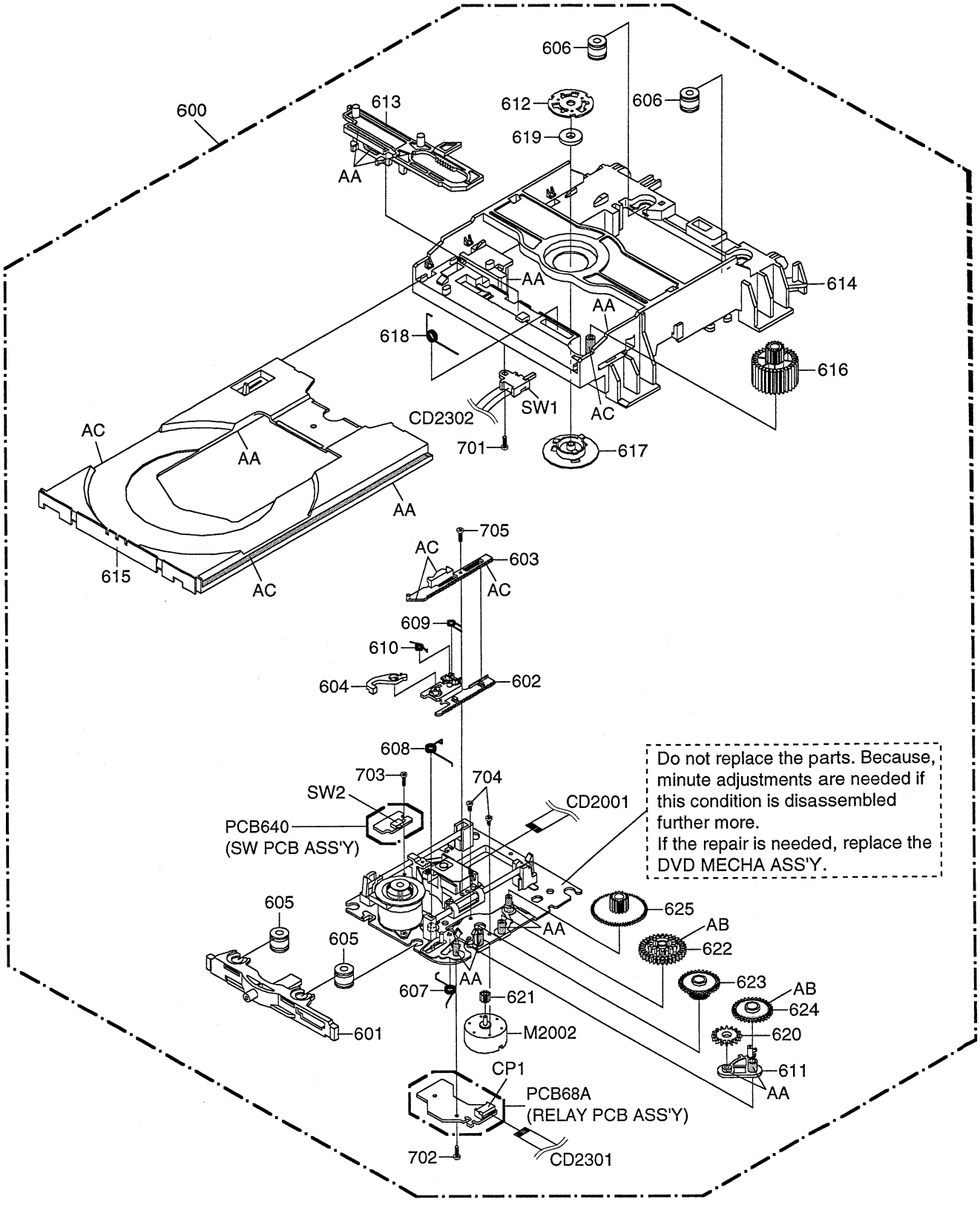
CHASSIS EXPLODED VIEW (BOTTOM VIEW)



CLASS	PART NO.	MARK
GREASE	G-555G	AA
	MG-33	AB
	FG-84M	AC
	FL-721	AD
	G-313Y	AE

NOTE: Applying positions AA, AB, AC, AD and AE for the grease are displayed for this section. Check if the correct grease is applied for each position.

DVD DECK EXPLODED VIEW



CLASS	PART NO.	MARK
GREASE	G-555G	AA
	G-337F	AB
	SF-112	AC

NOTE: Applying positions AA, AB and AC for the grease are displayed for this section.
Check if the correct grease is applied for each position.

MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
101	A5F602G720	CABINET,FRONT ASSY	
101A	701WPJ1194	CABINET,FRONT	
101B	712WPJ0809	FLAP	
101C	713WPA0266	GLASS,LED	
101D	713WPA0267	GUIDE,REMOCON	
101E	7232020559	BADGE,BRAND	
101F	735WPB0255	BUTTON,FRAME-DVD	
101G	735WPB0256	BUTTON,FRAME-VCR	
101H	738WPA0067	STOPPER,BUTTON-DVD	
101I	738WPA0068	STOPPER,BUTTON-VCR	
101J	743WKA0037	SPRING,FLAP	
101K	800WQ00056	FELT SHEET	
102	A5F602G740	CABINET,BACK ASSY	
102A	702WPA0976	CABINET,BACK	
102B	800WQ0A012	FELT SHEET	
102C	800WQ0A014	FELT SHEET	
103	701WPA0686	HOLDER,DECK	
104	701WPA0751	HOLDER,DECK	
105	752WSA0230	SHIELD,CASE HEAD AMP	
106	752WSA0290	SHIELD,COMPO	
107	753WUAA006	SPRING,EARTH HEAD AMP	
108	761WSA0098	SHIELD,21PIN	
109	85OP700038	HOLDER,END SENSOR	
110	761WPA0223	HOLDER,FBT	
111	7232020744	SHEET,IC	
112	7232020745	SHEET,IC	
113	752WSA0335	DVD,TOP	
114	752WSA0336	SHIELD,M-PEG	
115	753WSA0154	SHIELD,FRONT	
116	761WSA0106	ANGLE,DECK	
117	7230007671	SHEET,JACK	
118	7260000341	SHEET,CAUTION	
119	752WSA0275	COVER,AC HEAD	
120	752WSA0303	SHIELD,AV JACK	
121	752WSA0309	SHIELD,TOP	
122	752WSA0310	PLATE,BOTTOM	
123	774WPA0002	HOLDER,WIRE	
124	899EFBA001	WIRING CLIP	
125	8995034000	CORD CLIP UL CO.	
126	712WPB0135	PLATE,TRAY-FRONT	
127	7222022636	SHEET,RATING	
128	7235630001	SHEET,DVD	
129	735WPB0270	BUTTON,POWER	
130	741WUA0024	SPRING,EARTH	
131	753WSA0155	PLATE,SPEAKER1	
132	753WSA0156	PLATE,SPEAKER2	
133	800WR0A010	SHEET,CRT SUPPORT (D)	
134	800WR0A011	SHEET,CRT SUPPORT (D)	
135	899HV3T000	HOLDER,ANODE WIRE	
136	724WNA0010	SHEET,PC	40x50xT0.5
201	8117540A64	SCREW,TAPPING(B0) TRUSS	4x16
202	8117140804	SCREW,TAPPING(B) PAN	4x8
203	8121F50B84	SCREW,TAP TITE(P) FAI20 FLAT	5x28
204	8110630804	SCREW,TAP TITE(P) BRAZIER	3x8
205	8109130B94	SCREW,TAP TITE(B) R PAN	3x29
206	8109I30A04	SCREW,TAP TITE(B) WH7	3x10
207	8109I30804	SCREW,TAP TITE(B) WH7	3x8
208	8109230804	SCREW,TAP TITE(B) BIND	3x8
209	8107630B04	SCREW,TAP TITE(S) BRAZIER	3x20
210	8107630804	SCREW,TAP TITE(S) BRAZIER	3x8
211	8107930604	SCREW,CUP(S)	3x6
---	791WHAA017	LAMIFILM BAG	
---	792WHA0435	PACKAGE,TOP	
---	792WHA0436	PACKAGE,BOTTOM	
---	793WCD1472	GIFT BOX	
---	A5F602A975	INSTRUCTION BOOK KIT	
---	JB5Z0300	POLYBAG,INSTRUCTION	
---	J5F60201A	INSTRUCTION BOOK (F)	
---	J5F60207A	QUICK SET-UP SHEET	
---	J5F60210A	INSTRUCTION BOOK (D)	

CHASSIS REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
300	A5F602A420A	DECK ASSY A5F602A420A	501	8107226804	SCREW,TAP TITE(S) BIND 2.6x8
			502	83ETW30000	E-RING 3.0
301	85OA400234	PINCH ROLLER BLOCK	503	8107226404	SCREW,TAP TITE(S) BIND 2.6x4
302	85OA500026	AHC ASS'Y	504	8102120604	SCREW,PAN M2x6
303	85OP200290	BELT,CAPSTAN (S)	505	8109126604	SCREW,TAP TITE(B) PAN 2.6x6
304	85OP600581	WORM	506	810A130404	SCREW/WASHER(A) M3x4
305	85OP500083	BASE,AC HEAD	507	810A126504	SCREW/WASHER(A) M2.6x5
306	85OP800324	SPRING,AC HEAD	508	82Q264713N	POLYSLIDER WASHER 2.6x4.7xT0.13
307	85OA000459	MAIN CHASSIS ASS'Y	509	82P184505N	POLYSLIDER WASHER(CUT) 1.8x4.5xT0.5
308	85OA200089	CLUTCH ASS'Y			
309	85OA200090	ARM IDLER ASS'Y	510	8107226604	SCREW,TAP TITE(S) BIND 2.6x6
310	85OA300065	LOADING ARM S UNIT	CD1501	122H071704	CORD JUMPER 2H071704
311	85OA300066	LOADING ARM T UNIT	CD1502	122Y021002	CORD JUMPER 2Y021002
312	85OA400223	INCLINED BASE T UINT 3S	H5001	1523Q91003	HEAD (AUDIO CONTROL) VTR-1X2RPE22-756
313	85OA400232	P5 ARM ASS'Y 2	H5002	1543Q02014	HEAD (FULL ERASE) VTR-1X2ERS11-154
314	85OA400235	TENSION ARM ASS'Y 2	⚠ M101	1596S98001	MOTOR (LOADING) MDB2B66
315	85OA400231	INCLINED BASE S UNIT	⚠ M2001	1510S98038	CAPSTAN DD UNIT F2QVB33
316	85OP800358	SPRING,LOCKER	M2003	1589S11017	MICRO MOTOR I2OAL05 or
317	85OP900736	CASS,HOLDER		1589S11015	MICRO MOTOR I2OAL01
318	85OP900748	CASS,SIDE L	⚠ UN4001	A2A741B500	CYLINDER UNIT ASS'Y A2A741B500
319	85OP900749	CASS,SIDE R			
320	85OP900739	LOCKER,R			
321	85OA900228	LINK UNIT			
322	85OP000496	POST,CASS GUIDE			
323	85OP200316	REEL,S (S)			
324	85OP200317	REEL,T (S)			
325	85OP200308	GEAR,IDLER			
326	85OP200311	GEAR,CLUTCH			
327	85OP200312	GEAR,COUPLING			
328	85OP200313	LEVER,CLUTCH			
329	85OP300194	GEAR,MAIN LOADING			
330	85OP400490	LEVER,TENSION			
331	85OP400492	HOLDER,TENSION			
332	85OP400520	CAP.P4			
333	85OP400542	BAND,TENSION			
334	85OP400533	CONNECT,TENSION			
335	85OP600573	ARM,BRAKE T			
336	85OP600584	BAND,BRAKE T			
337	85OP600577	CAM,PINCH ROLLER			
338	85OP600578	CAM,MAIN			
339	85OP600579	ROD,MAIN			
340	85OP600582	GEAR,JOINT			
341	85OP800322	SPRING,TENSION			
342	85OP800360	SPRING,BRAKE T			
343	85OP800355	SPRING,COUPLING			
344	85OP800356	SPRING,RING			
345	85OP900750	LEVER,LINK 2			
346	85OP900744	LEVER,FLAP			
347	85OP900745	CASS,OPENER			
348	85OP700035	REFLECTOR,LED			
349	85OP900746	BRACKET,TOP 3V			

DVD DECK REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
600	A5F101H650	DVD MECHA ASSY	A5F101H650
601	92P100022A	TRAVERSE HOLDER	
602	92P100032A	RACK,FEED 1	
603	92P100033A	RACK,FEED 2	
604	92P100035A	LEVER,RACK FEED	
605	92P200006A	INSULATOR(F)	
606	92P200007A	INSULATOR(R)	
607	92P300008A	SPRING,CHASSIS	
608	92P300005A	SPRING,ARM IDLER	
609	92P300006A	SPRING,RACK FEED 2	
610	92P300007A	SPRING,RACK FEED 1	
611	92P100031A	ARM,IDLER	
612	92P000001A	CLAMPER PLATE	
613	92P100019A	RACK,LOADING	
614	92P100020A	MAIN FRAME M	
615	92P100021A	TRAY	
616	92P100023A	GEAR,MAIN	
617	92P100024A	CLAMPER	
618	92P300002A	SPRING,RACK LOADING	
619	92P400002A	MAGNET,CLAMPER	
620	92P100030A	GEAR,IDLER	
621	92P100025A	GEAR,MOTOR	
622	92P100026A	GEAR,MIDDLE 1	
623	92P100027A	GEAR,MIDDLE 2	
624	92P100028A	GEAR,MIDDLE 3	
625	92P100029A	GEAR,FEED	
701	8110226804	SCREW,TAP TITE(P) BIND	2.6x8
702	8110120604	SCREW,TAP TITE(P) PAN	2x6
703	8107220504	SCREW,TAP TITE(S) BIND	2x5
704	8140117254	SCREW,PAN	M1.7x2.5 P3
705	8110220804	SCREW,TAP TITE(P) BIND	2x8
CD2001	122H0O1901	CORD JUMPER	2H0O1901
CD2301	122H080701	CORD JUMPER	2H080701
CD2302	06CH232101	CORD CONNECTOR	CH232101
CP1	069JV80180	CONNECTOR PCB SIDE	IMSA-9615S-08C-PP
⚠ M2002	1515S98001	FEED MOTOR	BCD3B81
PCB640	A5E601V640	PCB ASS'Y	VEBA17A
PCB68A	A5E601V680	PCB ASS'Y	VEBA12A
SW1	0515S32001	SWITCH	SSS-23-6
SW2	0500S01032	PUSH LEVER SWITCH	SW1AB-271-10A

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
		RESISTORS	
⚠ R408	R3X18A221J	R,METAL OXIDE	220 OHM 2W
⚠ R422	R5X34F562J	R,CEMENT	0 5.6K OHM 10W
R430	R3X18A221J	R,METAL OXIDE	220 OHM 2W
⚠ R447	R65582151J	R,FUSE	150 OHM 1/2W
⚠ R448	R3K181102J	R,METAL	1K OHM 1W
⚠ R450	R6558A5R6J	R,FUSE	5.6 OHM 2W
⚠ R802	R3X181153J	R,METAL OXIDE	15K OHM 1W
⚠ R805	R3X181153J	R,METAL OXIDE	15K OHM 1W
⚠ R810	R3X181153J	R,METAL OXIDE	15K OHM 1W
⚠ R1701	R002T2155J	RC	1.5M OHM 1/2W
⚠ R1703	R63581R22J	R,FUSE	0.22 OHM 1W
⚠ R1704	R5X2CE5R6J	R,CEMENT	5.6 OHM 7W
⚠ R1706	R3X28BR27J	R,METAL OXIDE	0.27 OHM 3W
⚠ R1730	R3X181R33J	R,METAL OXIDE	0.33 OHM 1W
⚠ R1735	R3X28B104J	R,METAL	100K OHM 3W
⚠ R3006	R655U4100J	R,FUSE	10 OHM 1/4W
R3016	R3X28B120J	R,METAL OXIDE	12 OHM 3W
⚠ R3019	R655U4100J	R,FUSE	10 OHM 1/4W
⚠ R3025	R655U4100J	R,FUSE	10 OHM 1/4W
R3032	R002T2470J	RC	47 OHM 1/2W
		CAPACITORS	
C322	E02LF3102M	CE	1000 UF 25V
C405	E5EZF3222M	CE	2200 UF 25V
C421	E5EZF4102M	CE	1000 UF 35V
C423	P4J7F3334J	CMPP	0.33 UF 250V PMS
C424	P4N8FJ912H	CMPP	0.0091UF 1.25KV
C450	C0PLRR7H2K	CC	220 PF 2KV R
C801	C0JBB07H3K	CC	0.0022UF 2KV B
C1003	E51A0P104Z	CE	0.1 F 5.5V
⚠ C1701	P2122B334M	CMP	0.33 UF 275V ECQUL
C1703	C0JBB07H3K	CC	0.0022UF 2KV B
C1704	C0JBB07H3K	CC	0.0022UF 2KV B
C1705	E52D0H221M	CE	220 UF 400V
C1712	E02LF3222M	CE	2200 UF 25V
C1713	E5EZF2222M	CE	2200 UF 16V
C1715	C03L0R7Q2K	CC	470 PF 2KV R
C1717	E62NFC221M	CE	220 UF 200V
C1723	E02LF2222M	CE	2200 UF 16V
⚠ C1727	CD39B0MH2K	CC	220 PF 250V
⚠ C1732	CD39B0MH2K	CC	220 PF 250V
C1733	P3N1F5103J	CPP	0.01 UF 630V
C1734	C03L0R7H2K	CC	220 PF 2KV R
C1735	C03L0R7H2K	CC	220 PF 2KV R
⚠ C1741	CD39B0MH2K	CC	220 PF 250V
⚠ C1744	CD39B0MH2K	CC	220 PF 250V
⚠ C1751	CD39B0MH2K	CC	220 PF 250V
C4502	CQGTF0416Z	CC	1 UF 50V F
		DIODES	
D351	D1VT001330	DIODE,SILICON	1SS133T-77
D403	D2WT011E10	DIODE,SILICON	11E1-EIC
D404	D2WT011E10	DIODE,SILICON	11E1-EIC
D405	D2WT011E10	DIODE,SILICON	11E1-EIC
D406	D2WT011E10	DIODE,SILICON	11E1-EIC
D407	D2WT011E10	DIODE,SILICON	11E1-EIC
D408	D2WXRU2AM0	DIODE,SILICON	RU2AM-EIC
D411	D2WXN49370	DIODE,SILICON	1N4937
D413	D2WXN49370	DIODE,SILICON	1N4937
D601	DD1R0MA770	DIODE,SILICON	MA77
D602	D2WT011E10	DIODE,SILICON	11E1-EIC
D603	D2WT011E10	DIODE,SILICON	11E1-EIC
D604	D2WT11ES10	DIODE,SILICON	11ES1-EIC
D606	D97U08R21B	DIODE,ZENER	MTZJ8.2B T-77
D607	D97U08R21B	DIODE,ZENER	MTZJ8.2B T-77
D608	D97U08R21B	DIODE,ZENER	MTZJ8.2B T-77
D801	D1VT001330	DIODE,SILICON	1SS133T-77
D802	D1VT001330	DIODE,SILICON	1SS133T-77
D803	D1VT001330	DIODE,SILICON	1SS133T-77
D1001	D1VTB721Q0	DIODE,SCHOTTKY	RB721Q-40 T-77
D1003	0010E00330	INFRARED LED	LTE-3271T-012A-O
D1005	D1VT001330	DIODE,SILICON	1SS133T-77
D1006	D2WXSB1400	DIODE,SCHOTTKY	SB140-EIC
D1009	D97U06R21B	DIODE,ZENER	MTZJ6.2B T-77
D1010	D2WT011E10	DIODE,SILICON	11E1-EIC
D1011	D2WXSB1400	DIODE,SCHOTTKY	SB140-EIC
D1021	D1VT001330	DIODE,SILICON	1SS133T-77
D1201	D28TQS04N0	DIODE,SCHOTTKY	11EQS04N-TA1B2
D1202	D2WT011E10	DIODE,SILICON	11E1-EIC

REF. NO.	PART NO.	DESCRIPTION	
		DIODES	
D1252	D1VT001330	DIODE,SILICON	1SS133T-77
D1261	D1VT001330	DIODE,SILICON	1SS133T-77
⚠ D1701	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠ D1702	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠ D1703	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠ D1704	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
D1706	D1VT001330	DIODE,SILICON	1SS133T-77
D1708	D1VT001330	DIODE,SILICON	1SS133T-77
D1709	D2WXN49370	DIODE,SILICON	1N4937
⚠ D1710	D97U03301B	DIODE,ZENER	MTZJ33B T-77
D1712	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
⚠ D1713	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1
⚠ D1714	D28F21DQN9	DIODE,SCHOTTKY	21DQ09N-FC4
⚠ D1715	D2LKB340L0	DIODE,SCHOTTKY	SB340L-6737
⚠ D1716	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1
D1719	D2WXRU2AM0	DIODE,SILICON	RU2AM-EIC
D1720	D2WXN49370	DIODE,SILICON	1N4937
⚠ D1721	D2WXRU2AM0	DIODE,SILICON	RU2AM-EIC
D1723	D1VT001330	DIODE,SILICON	1SS133T-77
D1725	D1VT001330	DIODE,SILICON	1SS133T-77
⚠ D1727	D28F31DF60	DIODE,RECTIFIER	31DF6-FC
D1728	D97U01501B	DIODE,ZENER	MTZJ15B T-77
D2001	DDARDS1210	DIODE,SILICON	KDS121RTK
D2002	DDARDS1200	DIODE,SILICON	KDS120RTK
D2201	0021721150	LED	SLR-342VCT32
D2202	D2WXSB1400	DIODE,SCHOTTKY	SB140-EIC
D2203	0021721150	LED	SLR-342VCT32
D2204	0021721150	LED	SLR-342VCT32
D2301	DDDRL41480	DIODE,SILICON	MCL4148
D3002	D1VT001330	DIODE,SILICON	1SS133T-77
D3003	D28T11E1N1	DIODE,SILICON	11E1N-TA1B2
D3004	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D3005	D1VT001330	DIODE,SILICON	1SS133T-77
D3007	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D3008	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D3009	D2WXN40050	DIODE,SILICON	1N4005-EIC
D3010	D2WXN40050	DIODE,SILICON	1N4005-EIC
D3012	D1VT001330	DIODE,SILICON	1SS133T-77
D3014	D2BTAU02A0	DIODE,SILICON	AU02A V0
D3015	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D4203	D1VT001330	DIODE,SILICON	1SS133T-77
D4210	D1VT001330	DIODE,SILICON	1SS133T-77
D4501	D1VT001330	DIODE,SILICON	1SS133T-77
D4502	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D8501	DDDRL41480	DIODE,SILICON	MCL4148
D8502	DDDRL41480	DIODE,SILICON	MCL4148
D8503	DDDRL41480	DIODE,SILICON	MCL4148
D8504	DDDRL41480	DIODE,SILICON	MCL4148
D8505	DDDRL41480	DIODE,SILICON	MCL4148
D8506	DDDRL41480	DIODE,SILICON	MCL4148
D8510	DDDRL41480	DIODE,SILICON	MCL4148
		ICS	
⚠ IC351	I0FSP7523N	IC	AN7523N
⚠ IC352	I0FSP7523N	IC	AN7523N
⚠ IC401	I0WTD81740	IC	TDA8174A
IC601	I0WDE2248E	IC	STV2248E
IC1003	I9UF032310	IC	PST3231NR
IC1006	I54F50135A	IC	OEC0135A
IC1099	A5F602G015	IC	S-24C08ADP-01
IC1201	ICKF0310A0	IC	ET-TVT0310A
IC1202	I0UF012310	IC	MM1231XF
⚠ IC1701	I2BT068530	IC	STR-W6853
⚠ IC1704	000220001W	PHOTO COUPLER	PS2561L1-1-V(W)
IC2001	I0GF9XZ010	IC	PQ070XZ01ZP
IC2002	I5PK063150	IC	L6315ATXXTY or
	I5PKL63150	IC	L6315ATXXTV
IC2003	I5FJ0128V7	IC	CY62128VLL-70ZC
IC2301	I03F065600	IC	LA6560
IC2302	I07E00358F	IC	BA10358F-E2
IC2303	I07E00358F	IC	BA10358F-E2
IC2304	I07E00358F	IC	BA10358F-E2
IC2801	I03F00100M	IC	LA70100M-MPB
⚠ IC3001	I1KA97809A	IC	KIA7809API
⚠ IC3002	I1KA97805A	IC	KIA7805API
⚠ IC3005	I1KA97805A	IC	KIA7805API
⚠ IC3006	I1KA97809A	IC	KIA7809API
IC4002	I5PK055190	IC	STI5519AVB

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
		ICS	
IC4003	I5CF0CU040	IC	SN74AHCU04PWR
IC4007	IF6J016A27	IC	MT48LC4M16A2TG-75
IC4012	I5PJ000DT7	IC	M29W800DT70N6
IC4201	I0QF045800	IC	NJM4580M
IC4501	I04F38225F	IC	HA118225F
IC5501	I0KF79605H	IC	TDA9605H
IC8502	I17F0742K0	IC	PCM1742KE/2K
IC8504	I0GF9Z01Z0	IC	PQ025EZ01ZP
		TRANSISTORS	
Q301	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q302	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q303	TNAAB05003	COMPOUND TRANSISTOR	KRC102SRTK
Q305	TNAAJ05003	COMPOUND TRANSISTOR	KRC111SRTK
Q306	TNAAJ05003	COMPOUND TRANSISTOR	KRC111SRTK
Q402	TCAT032070	TRANSISTOR,SILICON	KTC3207-AT
Q405	TCAT03227Y	TRANSISTOR,SILICON	KTC3227_Y-AT
⚠ Q406	TD3Q021400	TRANSISTOR,SILICON	TT2140LS-YBC11
Q601	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q602	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q604	T8AA03881S	TRANSISTOR,SILICON	KTC3881S-RTK
Q605	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q606	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q607	TC3T030000	TRANSISTOR,SILICON	2SC3000-AA
Q608	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q609	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q610	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
⚠ Q804	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
⚠ Q805	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
⚠ Q806	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
Q1001	0002700690	PHOTO COUPLER	RPI-303
Q1002	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q1003	0002700680	PHOTO COUPLER	RPI-352C40N
Q1004	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q1005	0002700690	PHOTO COUPLER	RPI-303
Q1006	0000M00390	PHOTO TRANSISTOR	ST-304L
Q1007	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q1009	0002700680	PHOTO COUPLER	RPI-352C40N
Q1010	TPAAC05002	COMPOUND TRANSISTOR	KRA103SRTK
Q1011	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q1015	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q1016	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q1017	0000M00390	PHOTO TRANSISTOR	ST-304L
Q1101	TDAT00863Y	TRANSISTOR,SILICON	KTD863_Y-AT
Q1104	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q1253	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q1262	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q1703	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q1704	TA3T1371A0	TRANSISTOR,SILICON	2SA1371(D,E)-AE
Q1705	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q1706	TC3T029090	TRANSISTOR,SILICON	2SC2909(S,T)-AA
Q2001	T67J1036K0	TRANSISTOR,SILICON	2SA1036KT146
Q2003	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q2004	T27T030180	FET	2SK3018
Q2005	T27T030180	FET	2SK3018
Q2006	T67J1036K0	TRANSISTOR,SILICON	2SA1036KT146
Q2007	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q2008	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q2009	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q2301	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q2302	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
Q2303	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q2304	TNAAB05003	COMPOUND TRANSISTOR	KRC102SRTK
Q2305	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
Q2804	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q2806	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
⚠ Q3000	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
⚠ Q3001	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q3002	TNAAB05003	COMPOUND TRANSISTOR	KRC102SRTK
⚠ Q3004	TAAT01281Y	TRANSISTOR,SILICON	KTA1281_Y
Q3005	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
⚠ Q3006	TAAT01281Y	TRANSISTOR,SILICON	KTA1281_Y
⚠ Q3007	TBA0013660	TRANSISTOR,SILICON	KTB1366(O,Y)
Q3008	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q3009	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
⚠ Q3010	TAAT01281Y	TRANSISTOR,SILICON	KTA1281_Y
Q3011	TNAAB05003	COMPOUND TRANSISTOR	KRC102SRTK
⚠ Q3012	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT

REF. NO.	PART NO.	DESCRIPTION	
		TRANSISTORS	
⚠ Q3013	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q3014	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q4001	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q4002	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q4003	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
Q4201	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q4202	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,$
Q4203	TNAAD05001	COMPOUND TRANSISTOR	KRC104SRTK
Q4204	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q4205	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q4206	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q4207	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q4208	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q4209	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q4210	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q4211	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q4212	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q4213	TPAAB05001	COMPOUND TRANSISTOR	KRA102SRTK
Q4214	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q4215	TPAAA05001	COMPOUND TRANSISTOR	KRA101SRTK
Q4216	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q4501	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q4502	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q4505	TPAAC05002	COMPOUND TRANSISTOR	KRA103SRTK
Q4506	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q4507	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q4508	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q4606	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,$
Q4607	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q4618	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q8501	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
Q8502	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
Q8503	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
Q8505	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
		COILS &TRANSFORMERS	
L351	02AHA896A1	CORE,FERRITE	W5T18.4X10X9.6
L353	02AHA896A1	CORE,FERRITE	W5T18.4X10X9.6
L401	021679472K	COIL	4.7 MH
L402	0221000013	COIL,LINEARITY	ELH5L4112N
L601	02AHB9A972	CORE,FERRITE	W5T29X7.5X19
L602	021375101K	COIL	100 UH
L603	021LA61R5K	COIL	1.5 UH
L604	021673101K	COIL	100 UH
L606	0216A61R0K	COIL	1 UH
L608	0216A68R2K	COIL	8.2 UH
L610	021673101K	COIL	100 UH
L611	021673101K	COIL	100 UH
L612	033700005R	COIL,VIDEO IFT	3700005
L613	02167F101J	COIL	100 UH
L614	0216A6100K	COIL	10 UH
L801	021673820K	COIL	82 UH
L1001	0216A6120K	COIL	12 UH
L1203	02167F100J	COIL	10 UH
L1204	02167F101J	COIL	100 UH
L1205	02167F100J	COIL	10 UH
⚠ L1701	029X000109	COIL,LINE FILTER	SS28V-K10410
L1703	028R140018	COIL,DEGAUSS	8R140018
L1705	02AHB9A972	CORE,FERRITE	W5T29X7.5X19
L1706	02AHA896A1	CORE,FERRITE	W5T18.4X10X9.6
L2001	0216S1100J	COIL	10 UH
L2002	0216S1100J	COIL	10 UH
L2003	02167F2R2J	COIL	2.2 UH
L2004	02167F2R2J	COIL	2.2 UH
L2201	021LA6100K	COIL	10 UH
L2202	021LA6100K	COIL	10 UH
L2801	02167F470J	COIL	47 UH
L2804	0216A6680K	COIL	68 UH
L3003	02167E100K	COIL	10 UH
L3004	02A6B2E0A1	CORE,FERRITE	HF70T22*10*14
L4001	02167F220J	COIL	22 UH
L4002	02167F220J	COIL	22 UH
L4003	02167F220J	COIL	22 UH
L4004	02167F220J	COIL	22 UH
L4201	0216A6100K	COIL	10 UH
L4202	02167F101J	COIL	100 UH
L4203	0216A6100K	COIL	10 UH
L4204	0216A6100K	COIL	10 UH

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
		COILS &TRANSFORMERS	
L4206	02167F101J	COIL	100 UH
L4207	02167F101J	COIL	100 UH
L4208	0216A6100K	COIL	10 UH
L4502	02167D101K	COIL	100 UH
L4503	0316260088	COIL,BIAS OSC	1626008
L4505	02167F101J	COIL	100 UH
L4506	02167F101J	COIL	100 UH
L4507	0216A6820K	COIL	82 UH
L4508	02167F220J	COIL	22 UH
L4509	02167F220J	COIL	22 UH
L4510	0216A6120K	COIL	12 UH
L4511	0216A6390K	COIL	39 UH
L4512	02167F101J	COIL	100 UH
L4601	0326230038	COIL,TRAP	2623003
L4602	02167F101J	COIL	100 UH
L4608	02167F102J	COIL	1 MH
L5501	02167F101J	COIL	100 UH
L5502	02167F101J	COIL	100 UH
L8501	02167F2R2J	COIL	2.2 UH
L8502	02167F2R2J	COIL	2.2 UH
L8503	02167F2R2J	COIL	2.2 UH
L8504	02A6B2E0A1	CORE,FERRITE	HF70T22*10*14
L8507	02167F2R2J	COIL	2.2 UH
L8509	02167F2R2J	COIL	2.2 UH
T401	045009003J	TRANS,HORIZONTAL DRIVE	ETH09K14BZ
⚠ T1701	0481300044	TRANSFORMER,SWITCHING	81300044
		JACKS	
⚠ J801	066F120018	SOCKET,CATHODE RAY T	UBEISMS01S
J2201	060J131015	HEADPHONE JACK	MSJ-2000
J2202	060G401047	RCA JACK	HTJ-032-03AY
J2203	060G401046	RCA JACK	HTJ-032-03AW
J2204	060G401039	RCA JACK	HTJ-032-03AR
J4201	063G100046	SOCKET,21PIN	035_0_9972_05
J4202	060J411029	RCA JACK	MSP-213V1-732_PBSN
		SWITCHES	
SW1001	0508S11001	SWITCH (LEAF)	LSA-1144EAU
⚠ SW1702	0530105018	SWITCH	ESB92S23B
SW2201	0504101T34	SWITCH,TACT	EVQ21505R
SW2202	0504101T34	SWITCH,TACT	EVQ21505R
SW2203	0504101T34	SWITCH,TACT	EVQ21505R
SW2204	0504101T34	SWITCH,TACT	EVQ21505R
SW2205	0504101T34	SWITCH,TACT	EVQ21505R
SW2206	0504101T34	SWITCH,TACT	EVQ21505R
SW2207	0504101T34	SWITCH,TACT	EVQ21505R
SW2251	0504101T34	SWITCH,TACT	EVQ21505R
SW2252	0504101T34	SWITCH,TACT	EVQ21505R
SW2253	0504101T34	SWITCH,TACT	EVQ21505R
SW2254	0504101T34	SWITCH,TACT	EVQ21505R
SW2255	0504101T34	SWITCH,TACT	EVQ21505R
SW2256	0504101T34	SWITCH,TACT	EVQ21505R
SW2257	0504101T34	SWITCH,TACT	EVQ21505R
SW2258	0504101T34	SWITCH,TACT	EVQ21505R
		VARIABLE RESISTORS	
VR401	V1K63Q2BTE	VOLUME,SEMI FIXED	NVG6TLTAB471
VR402	V1K63H3BTE	VOLUME,SEMI FIXED	NVG6TLTAB222
VR1701	V1K62Q2BT8	VOLUME,SEMI FIXED	NVG6THTB471
		P.C.BOARD ASSEMBLIES	
PCB010	A5F602G010	PCB ASS'Y	VMC294A
PCB070	A5F602G070	PCB ASS'Y	TMC565A
PCB110	A5F602G110	PCB ASS'Y	TCC427A
PCB130	A5F602G130	PCB ASS'Y	VMB283A
		MISCELLANEOUS	
B402	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B403	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B601	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B1201	024HT03564	CORE,BEADS	W4BRH3.5X6X1.0
B1701	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B1702	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B2002	024HC31022	CORE,BEADS	FCM2012H-102T04
B2003	024HC31022	CORE,BEADS	FCM2012H-102T04
B2004	024HC31022	CORE,BEADS	FCM2012H-102T04
B2005	024HC31022	CORE,BEADS	FCM2012H-102T04
B4002	024HC31022	CORE,BEADS	FCM2012H-102T04
B4004	024HC31022	CORE,BEADS	FCM2012H-102T04
B4203	024HT03564	CORE,BEADS	W4BRH3.5X6X1.0
B8501	024HC31022	CORE,BEADS	FCM2012H-102T04
B8502	024HC31022	CORE,BEADS	FCM2012H-102T04

REF. NO.	PART NO.	DESCRIPTION	
		MISCELLANEOUS	
B8503	024HC31022	CORE,BEADS	FCM2012H-102T04
B8504	024HC31022	CORE,BEADS	FCM2012H-102T04
B8505	024HT03563	CORE,BEADS	W4BRH3.5X6X1.0X2
BT101	1412004008	BATTERY,MANGAN	R03(AB)E_2P_G
BT102	1412004008	BATTERY,MANGAN	R03(AB)E_2P_G
CD001	06CU012501	CORD,CONNECTOR	CU012501
CD010	06CUG14001	CORD,CONNECTOR	CUG14001
CD351	06CU123805	CORD,CONNECTOR	CU123805
CD353	06CU122501	CORD,CONNECTOR	CU122501
CD601	WGL6820038	FLAT CABLE AWM2468 AWG26 09C GRAY 200MM	
CD801	06CU82039A	CORD,CONNECTOR	SM1098-009-1A
CD851	WDL6030038	FLAT CABLE AWM2468 AWG26 6C BLACK 300MM	
CD852	WBL6020038	FLAT CABLE AWM2468 AWG26 4C BLACK 200MM	
CF601	1029238R93	FILTER,SAW	TSF5330U
CF602	1029138R93	FILTER,SAW	TSB6308U
CF603	1012T03101	FILTER,CERAMIC TRAP	MKT31.9MA110P-TF
CF604	1012T04001	FILTER,CERAMIC TRAP	MKT40.4MA110P-TF
CF605	1012T5R507	FILTER,CERAMIC TRAP	TPWA02B-TF21
CP001	069W01001A	CONNECTOR PCB SIDE	003P-2100
CP351	069W120019	CONNECTOR PCB SIDE	TID-X02P-B2
CP353	069W120019	CONNECTOR PCB SIDE	TID-X02P-B2
CP401	069J620100	CONNECTOR PCB SIDE	IMSA-9202B-1-02Z003-PP
CP402	069S450089	CONNECTOR PCB SIDE	A1561WV2-A5P
CP403	069J620080	CONNECTOR	IMSA-9206H-T
CP601	067U009039	WIRE HOLDER	B2013H02-9P
CP603	069X160379	CONNECTOR PCB SIDE	06JQ-ST
CP801	069S320010	CONNECTOR PCB SIDE	A2361WV2-2P
CP820	069R290589	CONNECTOR PCB SIDE	52147-0910
CP851	067U006049	WIRE HOLDER	B2013H02-6P
⚠ CD1701	120G459805	CORD,AC BUSH	0G459805
CD1702	06CUU24901	CORD,CONNECTOR	CUU24901
CD3001	06CU2F2201	CORD,CONNECTOR	CU2F2201
CD4505	122S061401	CORD,JUMPER	1.25X6X138XC
CD8501	122F0C2901	CORD,JUMPER	2F0C2901
CD8505	06CU2B2001	CORD,CONNECTOR	CU2B2001
CP1001	06972C0010	CONNECTOR PCB SIDE	TMC-J12P-B2
CP1702	069S420110	CONNECTOR PCB SIDE	A1561WV2-2P
CP1704	069S320419	CONNECTOR PCB SIDE	A3963WV2-3PD
CP2001	069XYO0010	CONNECTOR PCB SIDE	24FLZ-SM1-TB
CP2301	069JV80180	CONNECTOR PCB SIDE	IMSA-9615S-08C-PP
CP2302	069S230639	CONNECTOR PCB SIDE	A2001WR2-3P
CP4501	0697290620	CONNECTOR PCB SIDE	TOC-C09X-A1
CP4503	067U002019	WIRE HOLDER	B2013H02-2P
CP4505	069J760029	CONNECTOR PCB SIDE	IMSA-9604S-06Z14
CP8001	069S2B0629	CONNECTOR PCB SIDE	A2001WV2-11P
CP8002	069J7C0029	CONNECTOR PCB SIDE	IMSA-9604S-12Z14
CP8502	069J7C0019	CONNECTOR PCB SIDE	IMSA-9604S-12Z13
CP851A	069S2F0629	CONNECTOR PCB SIDE	A2001WV2-15P
CP852A	067U004029	WIRE HOLDER	B2013H02-4P
CP852B	067U004029	WIRE HOLDER	B2013H02-4P
CP853B	069R260589	CONNECTOR PCB SIDE	52147-0610
CUS011	800WFAA006	CUSHION A	
CUS012	800WFAA008	CUSHION C	
CUS131	800WFAA006	CUSHION A	
EL001	124120301A	EYE LET	XRY20X30BD
EL002	124116281A	EYE LET	XRY16X28BD
⚠ F1701	080NT04004	FUSE	50T040H
⚠ FB401	043214037F	TRANSFORMER,FLYBACK	FNI-14B001
FH1701	06710T0006	HOLDER,FUSE	EYF-52BC
FH1702	06710T0006	HOLDER,FUSE	EYF-52BC
OS2202	0773071003	REMOTE RECEIVER	RPM7138-SH10
⚠ RY1701	0560V20115	RELAY	ALKS321
SP351	070C533019	SPEAKER	SG04D11BNA
SP353	070C533019	SPEAKER	SG04D11BNA
TM101	076R0GK020	TRANSMITTER	R25-1912
⚠ TU601	0145517006	TUNER,VHF-UHF	TUWRF4EG-778F2
⚠ TH1701	D8E0J80A10	DEGAUSS ELEMENT	B59104-J80-A10
⚠ V801	098Q1404B2	CRT W/DY	A34AGT13X98(L)
X601	100CT4R408	CRYSTAL	HC-49/U
X1001	100CT01002	CRYSTAL	HC-49/U-S
X1002	100DA32R01	CRYSTAL	DT-26
X1201	100CT01302	CRYSTAL	HC-49/U-S
X2001	100BT02003	CRYSTAL	HC-49U/S
X4001	100BT02701	CRYSTAL	HC-49U/S
X4501	100DT4R410	CRYSTAL	AT-49

ELECTRICAL REPLACEMENT PARTS LIST

RESISTOR

RC.....	CARBON RESISTOR

CAPACITORS

CC.....	CERAMIC CAPACITOR
CE.....	ALUMI ELECTROLYTIC CAPACITOR
CP.....	POLYESTER CAPACITOR
CPP.....	POLYPROPYLENE CAPACITOR
CPL.....	PLASTIC CAPACITOR
CMP.....	METAL POLYESTER CAPACITOR
CMPL.....	METAL PLASTIC CAPACITOR
CMPP.....	METAL POLYPROPYLENE CAPACITOR

MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	COMBI 1415B SI		COMBI 1415 SI	
	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
127	7222022636	SHEET,RATING	7222022637	SHEET,RATING
---	793WCD1472	GIFT BOX	793WCD1474	GIFT BOX
---	JB5Z0300	POLYBAG,INSTRUCTION	JB5Z0200	POLYBAG.INSTRUCTION
---	A5F602A975	INSTRUCTION BOOK KIT	A5F605A975	INSTRUCTION BOOK KIT
---	J5F60201A	INSTRUCTION BOOK (F)	J5F60501A	INSTRUCTION BOOK
---	J5F60207A	QUICK SET-UP SHEET	J5F60507A	QUICK SET-UP SHEET
---	J5F60210A	INSTRUCTION BOOK (D)		DELETE

WHEN REPLACING EEPROM (MEMORY) IC

ADDRESS	COMBI 1415B SI	COMBI 1415 SI
	DATA	DATA
0BE	45	25
11D	86	82

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	COMBI 1415B SI		COMBI 1415 SI	
	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
IC1099	A5F602G015	IC S-24C08ADP-01	A5F605G015	IC S-24C08ADP-01
PCB010	A5F602G010	VCR PCB ASS'Y VMC294A	A5F605G010	VCR PCB ASS'Y VMC294A

SPEC.NO.	M5F6-05G
O/R NO.	W325506

SPEC.NO.	M5F6-02G
O/R NO.	W325507